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COLLEGE OF EDUCATION

THE EFFECT OF CONGRUENCE OF LEADERSHIP BEHAVIORS ON MOTIVATION, COMMITMENT, AND SATISFACTION OF COLLEGE TENNIS PLAYERS

By

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ABSTRACT

The purpose of this study was to evaluate the effect of congruence of leadership behaviors on motivation, commitment, and satisfaction of college tennis players. Respondents (n = 245) included collegiate tennis players from all NCAA division levels (I, II, and III). The athletes were asked to complete a demographic questionnaire, the preferred and perceived versions of the Revised Leadership Scale for Sports, Sport Motivation Scale, Sport Commitment Model Scale, and Athlete Satisfaction Questionnaire. The responses were collected in an online format.

Descriptive statistics were calculated for each of the demographic variables. Alpha (Cronbach) coefficients were calculated for the components of each measurement scale to verify internal consistency. Multivariate multiple regression analyses were utilized to determine the effect of demographic variables on leadership behavior preferences. In order to avoid the potential problems associated with the use of difference scores (Peter, Churchill, & Brown, 1993), a regression technique was applied to evaluate the leadership congruence hypothesis. The base scores (i.e. preferences and perceptions) were entered first followed by their interactional term (preferred x perceived). Two sets of multiple regression equations were calculated. In the first set, preference scores were entered first followed by the perceptions and the interaction term, and the second set followed a similar format but reversed the order of the preference and perception terms. The congruence hypothesis was accepted if the interaction significantly increased the amount of variance explained.

The results of this study indicated that neither gender nor ability level were predictive of preferred leadership behavior. Furthermore, the congruency of certain preferred and perceived leadership behaviors predicted intrinsic motivation to know, intrinsic motivation to experience stimulation, extrinsic motivation identified, amotivation, sport commitment, sport enjoyment, individual performance satisfaction, personal treatment satisfaction, team performance satisfaction, and training and instruction satisfaction. The findings are discussed in the context

of Chelladurai's (1999) Multidimensional Model of Leadership. Future research suggestions are forwarded.

CHAPTER 1

INTRODUCTION TO THE STUDY

The purpose of this chapter is to introduce important facets of this study. The introduction is presented in six sections which include: (a) Statement of the Problem; (b) Purpose Statement; (c) Theoretical Proposition; (d) Research Hypotheses; and (e) Delimitations.

Statement of the Problem

The concepts of leadership, motivation, commitment, and satisfaction have been mentioned as integral components of the sport of tennis by leading practitioners, scholars, and organizations (e.g., ASEP, 2002; Benjamin, 1989; Bollettieri, 2001; Braden & Wool, 1993; Fox, 1979; Gilbert & Jamison, 1993; Groppel, Loehr, Melville, & Quinn, 1989; Kriese, 1997; USTA, 1995; Van Raalte & Silver-Bernstein, 1999; Wardlaw, 2000; Weinberg, 2002). Most research on coaching effectiveness has assumed that coaches greatly influence athletes' performance, behavior, psychological, and emotional well-being. Indeed, Horn (2002) posited that the behavior of coaches directly influences the motivation, self-perceptions, perceived success, and achievement behavior of athletes. The behavioral changes of the athletes are thought to be a direct result of the coach's leadership, which has been defined as "the behavioral process of influencing individuals and groups toward set goals" (Barrow, 1977, p.232).

The study of leadership was initiated though trait and behavioral approaches, but the research failed to identify a specific set of traits or behaviors that consistently differentiated between effective and non-effective leaders. The shortcomings of the trait and behavioral approaches to study leadership spawned a series of situational leadership theories. These leadership models included the contingency theory (Fiedler, 1967), the situational leadership theory (Hersey & Blanchard, 1977), the path-goal theory (House, 1971), and adaptive-reactive leadership theory (Osborne & Hunt, 1975a). In 1978, Chelladurai and Carron argued the direct application of these situational-based theories to sport situations may be questionable based on the premise that sport teams contain unique characteristics which may make general leadership

concepts inapplicable. Therefore, Chelladurai (1978) proposed the Multidimensional Model of Leadership (MML), which purported to be situation-specific to sport.

The MML proposed that three aspects of leader behavior need to be in congruence with one another to achieve effective group performance and member satisfaction. The aspects of leader behavior included *required* (behavior that is required for a particular situation), *preferred* (behavior preferred of the coach by the athletes), and *perceived* (the coach's behavior as perceived by the athletes). Furthermore, Chelladurai posited that leader behavior was influenced by the characteristics of the situation, the leader, and the members. Although more study is warranted, initial research has supported the link between member characteristics and coaching behaviors (Chelladurai & Carron, 1983; Chelladurai, Imamura, Yamaguchi, Oinmuma, & Miyauchi, 1988; Chelladurai, Malloy, Imamura, & Yamaguchi, 1987). In the MML, leadership effectiveness, as defined in terms of congruence between required, preferred, and perceived leader behavior, results in member satisfaction and performance outcomes. Research has clearly identified a link between leadership behavior congruency and athlete satisfaction (Chelladurai, 1978; 1984; Chelladurai et al., 1988; Dwyer & Fischer, 1990; Horne & Carron, 1985; McMillin, 1990; Riemer & Chelladurai, 1995; Schliesman, 1987; Summers, 1983; Weiss & Friedrichs, 1986) as well as group performance (Gordon, 1986; Serpa, Pataco, & Santos, 1991; Weiss & Friedrichs, 1986). Collectively, these studies provide strong support for the congruency hypothesis within the MML.

Horn (1992) suggested that athlete outcomes should also serve as consequences of leadership behavior in addition to just performance and satisfaction. One such outcome could be sport commitment. Although not yet studied in a sport setting, a positive relationship has been noted between leadership behavior and organizational commitment (Alley & Gould, 1975; Glisson & Durick, 1988; Kraut, 1970; Newman, 1974; Porter, Campon & Smith, 1976; Savery, 1994; Wilson, 1995; Yousef, 2000; Zeffane, 1994). In addition, athlete motivation has also been identified as an outcome of leader behavior (Amorose & Horn, 2000; Black & Weiss, 1992; Charbonneau, Barling, & Kelloway, 2001; Pelletier & Vallerand, 1985; Vallerand & Pelletier, 1985).

The present study analyzes the effect of leadership congruence on motivation, commitment, and satisfaction of college tennis players. While athlete satisfaction is accounted for within the existing framework of the MML, athlete commitment and intrinsic motivation are

proposed to be influenced by leader behavior in this study. Tennis, as a sport, was chosen as the optimal medium to study such relationships due to its quantifiable degree of individual contribution in a team sport context. College players were chosen as the optimal population for study due to the strong existing infrastructure of coaches and players and the well-defined competitive structure within the National Collegiate Athletic Association.

In a practical sense, the proposed study could have a profound impact on how tennis is taught across the world in a variety of individual and group settings. More attention might be given to matching preferred leadership behaviors of the student and perceived leadership behaviors of the coach to optimize player motivation, commitment, and satisfaction. Furthermore, the study could have an effect on working relationships outside of the tennis realm, such as employer-employee relationships.

Purpose Statement

The purpose of this study is to investigate the potential positive relationships between the congruence of preferred and perceived leadership behaviors with motivation, commitment, and satisfaction of college tennis players. Specifically, the congruence of leadership behaviors will be compared with intrinsic (intrinsic motivation to know, intrinsic motivation toward accomplishments, and intrinsic motivation to experience stimulation) and extrinsic (external regulation, introjection, and identification) motivation, amotivation, determinants of sport commitment (sport commitment, sport enjoyment, social constraints, and involvement opportunities), and facets of athlete satisfaction (individual performance, personal treatment, team performance, training and instruction).

Theoretical Framework

Chelladurai's Multidimensional Model of Leadership (1978; 1990) serves as the theoretical framework for the present study. The MML specifies three types of leadership behavior: required, preferred, and perceived. Required leader behavior is influenced by situational characteristics such as organizational goals, formal structure, group task, social norms, government regulations, technology, and the nature of the group. In 1990, Chelladurai revised the antecedents of required leader behavior to also include member characteristics. In situations where members lack the intelligence, ability, experience, and/or personality dispositions to make judgments about situational requirements, the leader must make an

appropriate decision for the members. Therefore, required leader behavior is determined by situational and member characteristics.

Preferred leader behavior stems from both the aforementioned situational characteristics and member characteristics such as task-relevant ability (House, 1971; House & Dressler, 1974), personality traits, attitude toward authority (Lorsch & Morse, 1974; Morse, 1976), cognitive complexity (Wynne & Hunsaker, 1975), authoritarianism and the need for independence (Vroom, 1959). Perceived leader behaviors are partially determined by the characteristics of the leader (i.e., personality, ability, and experience). However, perceived leader behavior is also determined to some extent by required and preferred leader behavior. Therefore, the leader may conform his/her behavior to the requirements of the situation and the preferences of the members to some degree.

Chelladurai (1990) also proposes that group performance and member satisfaction are dependent upon the congruency of required, preferred, and perceived leader behaviors. Each of the components of leader behaviors plays a significant role in determining the outcome of the interaction between the leader and subordinates. Therefore, the leader must take into account the situational demands, member preferences, and his/her perceived behavior when attempting to alter group performance and member satisfaction.

Although the Multidimensional Model of Leadership proposes that strong leadership behavior congruence between the leader and the follower(s) will result in enhanced group performance and member satisfaction, other potential outcomes are also notable. For instance, a positive relationship has been noted between leadership behavior and organizational commitment (Alley & Gould, 1975; Glisson & Durick, 1988; Kraut, 1970; Newman, 1974; Porter et al., 1976; Savery, 1994; Wilson, 1995; Zeffane, 1994). Price and Weiss (2000) found that "coaching behaviors are associated with feelings of athlete anxiety, burnout, perceived competence, and enjoyment, which are important contributors to an athlete's continued involvement in sport (p. 405)." Similar findings have resulted from other studies (Black & Weiss, 1992; Horn, 1985; Smith, Smoll, & Barnett, 1995; Smoll, Smith, Barnett, & Everett, 1993; Udry, Gould, Bridges, & Tuffey, 1997) which supports Horn's (1992) notion that athlete outcomes should also serve as consequences of leadership behavior in addition to just performance and satisfaction.

Intrinsic motivation, which reflects an individual's choice to engage in an activity for the pleasure it brings (Deci & Ryan, 1985), is another potential outcome factor of leadership

congruence. Amorose and Horn (2000) found that "coaches who exhibit a leadership style characterized by low levels of autocratic behavior and who provide high frequencies of positive, encouraging, and informationally based feedback and low frequencies of ignoring players' successes and failures may create an environment that facilitates the development of intrinsic motivation in their athletes (p. 78)." This result is consistent with other findings (Black & Weiss, 1992; Pelletier & Vallerand, 1985; Vallerand & Pelletier, 1985) and with cognitive evaluation theory (Deci & Ryan, 1985). Therefore, one of the primary goals of this study will be to clarify the roles of commitment and intrinsic motivation within the Multidimensional Model of Leadership.

Research Hypotheses

Leadership has been formally defined as the use of noncoercive and symbolic influence to direct and coordinate the activities of the members of an organized group toward the accomplishment of group objectives (Jago, 1982). In an effort to conceptualize the role of leadership in sport, Chelladurai (1978; 1990) developed the Multidimensional Model of Leadership (MML). A portion of this model proposes that member characteristics influence preferred leadership behavior, but research involving this link has been conflictive.

One member characteristic that has been examined in regards to preferred leadership behavior is ability. Ability has been operationalized in a number of ways such as level of competition (i.e., high school vs. university: Chelladurai & Carron, 1983; intramural vs. intercollegiate: Erle, 1981; NCAA division levels I and II: Beam, 2002; Riemer & Toon, 2001; elite vs. club: Terry, 1984) and task role (i.e., starter vs. nonstarter: Garland & Barry, 1988). The results from these investigations has generally supported that athletes of a lesser ability prefer more positive feedback than those with more ability (Erle, 1981; Riemer & Toon, 2001; Terry, 1984). These conclusions support the notion that preferred leadership behavior is dependent upon member ability. In the present study, ability level will be examined from the perspective of competition level (NCAA Division levels I, II, and III) and task role (singles starter vs. nonstarter). Therefore, the following research hypotheses are formulated regarding the link between ability level and preferred leadership behavior:

H1a: The ability level of the collegiate tennis players as defined by NCAA division level will be a determinant of preferred leadership behavior.

H1b: The ability level of the collegiate tennis players as defined by singles starting status will be a determinant of preferred leadership behavior.

Another member characteristic that has been examined in regard to preferred leadership behavior is gender. Chelladurai and Saleh (1978) found that female athletes preferred more social support behavior than their male counterparts when a sample of recreational and competitive athletes was surveyed. Similarly, Riemer and Toon (2001) examined collegiate athletes and found female athletes to only prefer more social support behavior when they were coached by males. In addition, Terry (1984) found males to prefer more autocratic behavior than females in a sample of competitive elite athletes. In concordance with the tenets of the MML, the following hypothesis regarding gender and preferred leadership behavior is proposed:

H2: The gender of the collegiate tennis players will be a determinant of preferred leadership behavior.

Under Chelladurai's (1978) MML, member satisfaction and performance are the outcomes of leadership behavior. Although the MML defines leader behavior in terms of required, preferred, and perceived behaviors, researchers have chosen to initially focus on the relationship of preferred and perceived leadership behaviors (Chelladurai, 1978; 1984; Chelladurai et al., 1988; Dwyer & Fischer, 1990; McMillin, 1990; Riemer & Chelladurai, 1995; Schliesman, 1987; Summers, 1983; Weiss & Friedrichs, 1986). This research has shown that if preferred and perceived leadership behaviors are congruent, member satisfaction and performance are optimized. The current study expands previous research by considering additional athlete outcomes that might also serve as consequences of the congruency between preferred and perceived leadership behaviors in addition to group performance and member satisfaction. The examination of the outcomes of preferred and perceived leadership behavior will allow the present analysis to be compared with previous research.

In the present study motivation, defined as the direction and intensity of effort (Sage, 1977), is operationalized as a performance outcome. A popular perspective of motivation posits that behavior can be intrinsically motivated, extrinsically motivated, or amotivated (Deci & Ryan, 1985). Intrinsic motivation refers to engaging in an activity purely for the pleasure and satisfaction derived from doing the activity, whereas extrinsic motivation pertains to a wide variety of behaviors that are engaged in as a means to an end and not for their own sake (Deci, 1975). In contrast, amotivated individuals do not perceive contingencies between their actions

and the outcomes of their actions, which often results in feelings of incompetence and lack of control (Deci & Ryan, 1985). Research performed outside the theoretical framework of the MML has supported the notion that a coach's leadership behavior has the potential to develop intrinsic motivation in his/her athletes (Amorose & Horn, 2000; Black & Weiss, 1992; Pelletier & Vallerand, 1985; Vallerand & Pelletier, 1995). However, no evidence has been found that links leadership behavior with extrinsic motivation or amotivation. Therefore, the following research hypotheses are formulated regarding intrinsic motivation, extrinsic motivation, and amotivation in respect to leadership behavior:

H3: Intrinsic motivation will be dependent on the congruence between preferred and perceived leadership behaviors.

H4: Extrinsic motivation will not be dependent on the congruence between preferred and perceived leadership behaviors.

H5: Amotivation will not be dependent on the congruence between preferred and perceived leadership behaviors.

The present study also characterizes commitment as a performance outcome within the framework of the MML. Organizational commitment refers to the extent to which workers in an organization are devoted to the organization, its goals and values, and its processes (Chelladurai, 1999). Numerous researchers have noted the positive relationship between leadership behavior and organizational commitment (Alley & Gould, 1975; Glisson & Durick, 1988; Kraut, 1970; Newman, 1974; Porter et al., 1976; Savery, 1994; Wilson, 1995; Zeffane, 1994). In the context of sport participation, commitment has been defined as a psychological state representing the desire to resolve or continue sport participation (Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993). Therefore, sport commitment operates under a similar basis as organizational commitment, but it possesses a different focus or target of the behavior. Rather than assessing the athlete's devotion to the organization he/she represents, sport commitment encompasses the athlete's desire to continue participation in the sport of interest. Research has shown that coaching behaviors can influence an athlete's continued involvement in sport (Price & Weiss, 2000). Therefore, the following research hypothesis is formulated regarding sport commitment in relationship to leadership behavior:

H6: Sport commitment and its determinants will be dependent on the congruence between preferred and perceived leadership behaviors.

Finally, according to the MML, member satisfaction is a direct result of congruency of leadership behaviors. Athlete satisfaction has been defined as a positive affective state resulting from a complex evaluation of the structures, processes, and outcomes associated with the athletic experience (Chelladurai & Riemer, 1997). The level of an athlete's satisfaction is determined by the discrepancy between what is wanted by the athlete and the perception of what is received within the psychological, physical, and environmental domains (Chelladurai, 1978; 1984; Chelladurai et al., 1988; Dwyer & Fischer, 1990; Horne & Carron, 1985; McMillin, 1990; Riemer & Chelladurai, 1995; Schliesman, 1987; Summers, 1983; Weiss & Friedrichs, 1986). Since the leadership of the coach influences the psychological domain of the athlete, the following research hypothesis is formulated regarding athlete satisfaction and leadership behavior:

H7: Athlete satisfaction will be dependent on the congruence between preferred and perceived leadership behaviors.

In summary, intrinsic motivation, sport commitment, and athlete satisfaction are proposed to be dependent upon a high degree of congruence between preferred and perceived leadership behaviors.

Delimitations

This study is delimited to the following:

1. The pre-existing divisions from which the subjects were chosen (NCAA Divisions I, II, and III);
2. Subjects included on the official team roster in the sport of tennis;
3. Subjects who were full-time students at their respective colleges and universities; and
4. Subjects in this study belonged to an experimentally accessible population.

CHAPTER 2

REVIEW OF LITERATURE

The purpose of this chapter is to present a review of the literature pertaining to the variables in this study. The review is presented in four sections which include: (a) Leadership; (b) Motivation; (c) Commitment; (d) Satisfaction; and (e) Summary.

Leadership

Leadership is defined as the use of noncoercive and symbolic influence to direct and coordinate the activities of the members of an organized group toward the accomplishment of group objectives (Jago, 1982). Over time, leadership has been defined in terms of individual traits, leader behavior, interaction patterns, role relationships, follower perceptions, influence over followers, influence on task goals, and influence on organizational culture (Yukl & Van Fleet, 1992). During the 20th century, researchers have utilized several approaches to studying leadership including the trait approach, behavioral approach, power and influence approach, and situational approach. Recent theories including transformational and charismatic leadership incorporate elements from prior approaches.

Leadership is an important component of overall effectiveness because it is seen as the force that energizes and directs group behavior. Legendary basketball coach John Wooden wrote, "A leader, particularly a teacher or coach, has a most powerful influence on those he or she leads, perhaps more than anyone outside of the family. Therefore, it is the obligation of that leader, teacher, or coach to treat such responsibility as a grave concern" (Wooden & Jamison, 1997, p. 111). Wooden's reverence for leadership reflects the impact leadership has on follower behavior. Given the centrality of leadership to the behavior of people in groups, it is important to define the impact of leadership on attitudes such as motivation, commitment, and satisfaction. Since leadership affects attitudes, and attitudes drive behavior, leadership can be viewed as a catalyst for behavior change among athletes.

Situational and Contingency Leadership Theories

Situational leadership focuses on the behavioral and situational factors of effective leadership. Situational factors such as the leader's personality, task requirements, and the needs, attitudes, and expectations of members influence the effectiveness of the leader. Several prominent leadership models utilized this approach including the contingency theory (Fiedler, 1967), the situational leadership theory (Hersey & Blanchard, 1977), the path-goal theory (House, 1971), and adaptive-reactive leadership theory (Osborne & Hunt, 1975).

Fiedler's contingency theory. Fiedler's (1967) contingency theory posited that effective group performance was dependent upon the appropriate match of the leader's personality and the situation. Personality orientation of the leader is centered on a task or interpersonal style. Situational factors that influence leader effectiveness included leader-member relations, degree of task structure, and power-position of the leader. Leader-member relations referred to the quality of the relationship between the leader and member. The leader's influence over the members was enhanced through a strong relationship. Task structure referred to how clearly the goals and methods to achieve the goals were stated and understood. As the structure of tasks increases for the group, so does the leader's influence over the members. Power-position of the leader referred to control over rewards and sanctions, authority over group members, and support provided from the organization. The leader's influence over the members was in direct proportion to the power possessed by the leader over the members.

Hersey and Blanchard's situational leadership theory. Hersey and Blanchard's (1977) situational leadership theory proposed that leaders should vary their behaviors according to the member's maturity. Hersey and Blanchard (1977) classified leader behaviors along two dimensions: initiating structure and consideration. Initiating structure, termed task behavior, described one-way directional communication from the leader to the member. Consideration, termed relationship behavior, described two-way directional communication from the leader when providing social-emotional support for the member. Member maturity or readiness referred to the ability and willingness of members to take responsibility for directing their behavior in relation to a specific task.

Maturity level ranged from "low" to "moderately low" to "moderately high" to "high". Hersey and Blanchard (1977) suggested that the orientation of the leader's behavior should change based on the maturity level of the member. A low maturity level prompted a high

task/low relationship response from the leader. High task/low relationship leader behavior refers to one-way communication, or "telling", to define the roles of members. A member with a moderately low maturity level required a high task/high relationship behavior from the leader. High task/high relationship leader behavior included defining member roles and allowing two-way communication to provide social-emotional support to get members to believe in decisions. A low task/high relationship leader behavior was necessary for members with moderately high maturity levels. Low task/high relationship leader behavior referred to a sharing of the decision making between the leader and member, which allowed members to "participate" with facilitating leader behavior. Finally, members with high maturity levels dictate a low task/low relationship leader behavior. Low task/low relationship leader behavior referred to the leader "delegating" responsibilities to members.

House's path-goal theory. The path-goal theory of leadership (House, 1971) postulated that the eventual performance and satisfaction of group members were highly influenced by the appropriateness of leader behaviors in relation to member's needs, desires, and characteristics of the task. Therefore, the function of the leader was to provide coaching, guidance, and personal support to members if necessary. The path-goal theory proposed that group members preferred a highly structured regime when presented with ambiguous, varied, and interdependent tasks. Initiating structure and close supervision from the leader helped clarify the path-goal relationship and increased the coordination, satisfaction, and performance of the group members. Should the members not be able to make valid judgments about situational requirements because of their characteristics, the leader must take action and decide for the members.

Osborne and Hunt's adaptive-reactive leadership theory. The adaptive-reactive leadership theory (Osborne & Hunt, 1975) suggested distinctions between adaptive and reactive leader behaviors. Adaptive behaviors were dictated by situational requirements and reflected the leaders' efforts to adapt to the conditions and requirements of the wider organizational system. These behaviors were controlled by formal structure and organizational size. Reactive behaviors were reactions to member needs and preferences and were only utilized at the discretion of the leader. Osborne and Hunt (1975) assumed that members responded mainly to the reactive behaviors of the leader, which were constrained and controlled by situational factors.

Yukl's discrepancy model of leadership. The discrepancy model of leadership (Yukl, 1971) was developed to explain the relationship between leader behavior and subordinate

satisfaction with the leader. Yukl proposed a system of three distinct leader behavior dimensions: Consideration, Initiating Structure, and Decision-Centralization. Consideration refers to the degree to which a leader acts in a warm and supportive manner and shows concern and respect for his/her subordinates, while Initiating Structure represents the degree to which a leader defines and structures his/her own role and those of his/her subordinates toward goal attainment (Halpin & Winer, 1957; Hemphill & Coons, 1957). Decision-Centralization refers to the average degree of subordinate participation in the various decision-making procedures used by a leader. In his discrepancy model, Yukl proposed that subordinate satisfaction was a function of the difference between a subordinate's preferences and actual experiences. A low discrepancy between preferences and experiences would result in a higher degree of satisfaction. Therefore, leader behavior would result in subordinate satisfaction if the leader's behavior matched the preferences of the subordinate.

Multidimensional Model of Leadership. Although contingency and situational theories focused on behavioral and situational factors, research has not provided conclusive support for these theories in the sport setting. The literature suggested that investigations of leadership in the sport environment required a multiple factor approach. In response, a Multidimensional Model of Leadership (Chelladurai, 1978, 1993; Chelladurai & Carron, 1978) was synthesized and extended to the athletic context. This model is based on past leadership theories including Fiedler's (1967) contingency model of leadership effectiveness, Evans' (1970) and House's (1971; House and Dressler, 1974) path-goal theory of leadership, Osborn and Hunt's (1975a) adaptive-reactive theory of leadership, and Yukl's (1971) discrepancy model of leadership. Chelladurai's Multidimensional Model of Leadership incorporates the leader, follower, and situational context dimensions of leadership, which coincides with Hollander's (1978) assertion that the leadership process is best understood as the occurrence of mutually satisfying transactions among leaders and followers within a particular situational context. In other words, interactions between leaders, followers, and situations must be thoroughly studied to truly identify the locus of leadership.

According to the Multidimensional Model of Leadership (**Figure 1**), situational characteristics (i.e. team goals, team structure, group task and associated technology, social norms, cultural values, and government regulations), leader characteristics (i.e. personality, ability, experience, etc.), and member characteristics (i.e. gender, age, ability, etc.) are

antecedents of leader behavior. Furthermore, leader behavior can be classified as required, preferred, or perceived, and the congruence of these three factors determines the levels of performance and satisfaction. The consequences of the leader's perceived behavior include performance and satisfaction, but those consequences are mediated by the required and preferred behavior of the leader. In addition, a feedback loop is proposed to exist between performance and satisfaction outcomes and perceived leader behavior, meaning that eventual performance and satisfaction may alter perceived leader behavior.

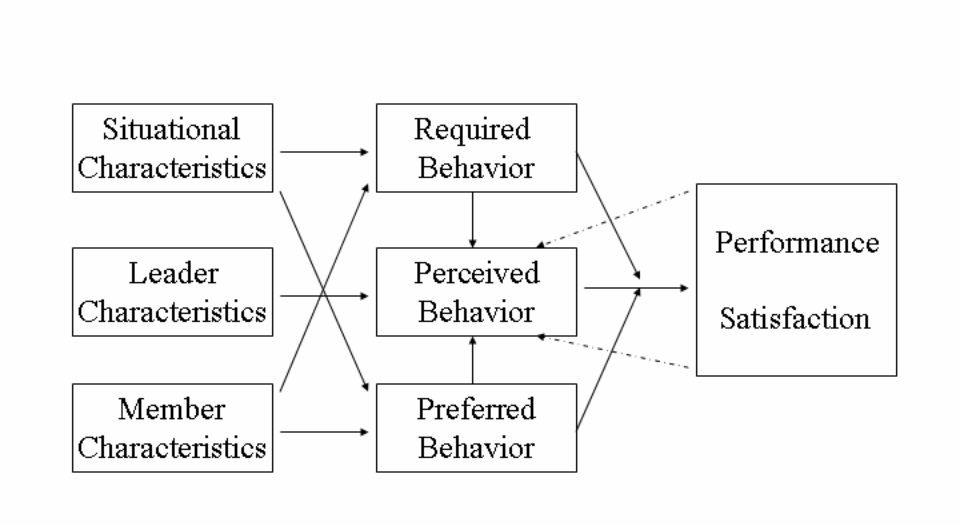

Figure 1. The Multidimensional Model of Leadership (Chelladurai, 1999)

Antecedents of Leader Behavior

The Multidimensional Model of Leadership includes three determinants of leader behavior that were derived from prior leadership models: situational characteristics (Osborne & Hunt, 1975a), leader characteristics (Fiedler, 1967), and member characteristics (Hersey & Blanchard, 1977; House, 1971). These antecedents are proposed to influence required, preferred, and perceived leadership behavior. The majority of research concerning the antecedents of leadership in sport has focused upon individual differences and situational variables.

Individual differences. Gender is an individual difference found to be a significant determinant of preferred leadership. Chelladurai and Saleh (1978) sampled 160 physical education students and found that males preferred more autocratic and supportive leadership behavior than their female counterparts. Similarly, Riemer and Toon (2001) examined collegiate

tennis players and found female athletes to only prefer more social support behavior when they were coached by males. In addition, Terry (1984) found males to prefer more autocratic behavior than females in a sample of competitive elite athletes. Erle (1981) completed a similar study using a sample of 335 male and female intramural and intercollegiate hockey players. The results indicated that males preferred more training and instruction, autocratic behavior and social support from their coaches than the females. However, female players preferred more democratic leadership behavior from their coaches when compared to the male players.

Gender has also been examined within the context of perceived leadership. Although Serpa, Pataco, and Santos (1991) examined 87 male handball players from the 1988 World Championships and Serpa and Antunes (1989) studied 80 elite female volleyball players participating in the Portuguese National Championship, both studies reported similar results. Athletes perceived their respective coaches to emphasize training and instruction, and rewarding behavior, while placing the least emphasis on democratic behavior. However, other studies have provided contradictory results. For example, Liukkonen and Salminen's (1990) study of 399 young Finnish athletes indicated that female coaches were perceived to be more democratic and socially supportive than male coaches. Furthermore, Salminen, Liukkonen, and Telama (1990) found that female coaches perceived themselves to be more instructive, supportive, and rewarding than Finnish male coaches. Mondello and Janelle (2001) noted that coaches of male teams exhibited significantly higher levels of positive reinforcement than coaches of female teams. The preliminary findings of these studies suggest the level of competition may influence perceived leadership since the coaches of elite male and female players seem to exhibit similar behaviors.

Another variable associated with preferred leadership is personality. Erle's (1981) aforementioned study on intramural and intercollegiate hockey players found that those athletes high on task motivation preferred more training and instruction, while those scoring high on affiliation and extrinsic motivation preferred more social support. Chelladurai and Carron (1981) examined the relationship of cognitive structure and impulsivity to preferred leadership behavior. Cognitive structure was defined as the need for more information and structure in one's environment. The results indicated that those athletes scoring high on cognitive structure preferred significantly more training and instruction with less autocratic behavior than those

athletes with lower cognitive structure. In addition, the more impulsive athletes preferred more social support behavior from the coach than the less impulsive athletes.

Athlete maturity level is also associated with preferred leadership behavior. Chelladurai and Carron (1983) assessed the leadership preferences of high school midget, high school junior, high school senior, and university level basketball players. The results showed that preference for training and instruction progressively decreased from high school midget through junior to senior levels and increased at the university level. Furthermore, the preference for social support progressively increased from the high school midget to the university level. Serpa (1990) discovered that younger female basketball players in Portugal preferred more social support and democratic behavior, while older players preferred more autocratic behavior. Other studies have shown that more experienced players preferred more positive feedback (Erle, 1981) and autocratic and social support (Chelladurai & Carron, 1983) when compared to less experienced players.

The ability level of athletes has also shown to impact sport leadership. A study of 399 young Finnish athletes indicated that high-ability athletes perceived their coaches to be more autocratic and less democratic, rewarding, and socially supportive when compared to low-ability athletes (Liukkonen & Salminen, 1990). Garland and Barry (1988) found that more able players, as compared to the less able players, perceived their coaches to emphasize more training and instruction, social support, and positive feedback. In addition, more able players perceived their coaches to be more participative and less autocratic in nature. Schubiger (1993) examined the perceived and preferred coach leader behaviors of high school and college football players. The results indicated that college players perceived a significantly greater amount of social support and training and instruction behaviors than the high school players. Furthermore, the collegiate players reported a higher preference for social support behavior when compared to their high school counterparts. As Chelladurai (1993) noted, it appears that "as athletes gain experience and/or ability, they seem to prefer their coaches to be more autocratic and socially supportive. That leads to the concept of the coach as the benevolent autocrat (p. 652)."

A recent study has identified coaching efficacy as a predictor of leadership style in intercollegiate athletics (Sullivan & Kent, 2003). Coaching efficacy has been defined as "the extent to which coaches believe they have the capacity to affect the learning and performance of their athletes" (Feltz, Chase, Moritz, & Sullivan, 1999, p. 765). The authors examined an

international sample of 224 coaches and found coaching efficacy to account for up to 42% of the variance in leadership style. These results support the consideration of coaching efficacy as a predictor of leadership style.

Situational variables. Situational variables are described in the MML as an important determinant of leader behavior. The situational characteristics influencing required leader behavior include organizational goals, formal structure, group task, social norms, government regulations, technology, and the nature of the group (Chelladurai, 2001). The situational variables that have been studies in the context of sport leadership include organizational goals, task type, and culture.

Erle (1981) examined 335 intramural and intercollegiate hockey players with differing organizational goals. The intramural teams participated in the pursuit of pleasure while the intercollegiate teams were in pursuit of excellence. The members of intercollegiate hockey teams preferred greater training and instruction and social support from their coaches, while the intramural players preferred more positive feedback and democratic behavior from their coaches.

Researchers have also found differing leadership preferences based on task type. Chelladurai (1978) found that athletes involved in interdependent tasks (team sports) or variable tasks (open sports such as basketball) preferred more training and instruction than did the athletes in independent tasks (individual sports) or nonvariable tasks (closed sports such as swimming). Furthermore, athletes in independent tasks and in nonvariable tasks preferred more democratic behavior than their respective counterparts, who preferred more autocratic behavior. Lindauer (2000) recently examined the preferred leadership behaviors of college athletes in the following individual and team sports: wrestling, men's and women's track and field, men's basketball, baseball, and softball. The study included a total of 167 collegiate athletes at the Division III level. The results indicated that individual sport athletes preferred a greater degree of democratic behavior and positive feedback than those who participated in team sports.

Beam (2002) examined the differences of student-athletes' preferred leadership behavior for their coaches based on gender, competition level, task dependence, and task variability. Based on the feedback of 408 student-athletes from NCAA Division I and Division II universities, the author concluded that Division I independent sport student-athletes had significantly higher preferences for autocratic behavior than Division II independent sport student-athletes. Furthermore, both Division I and II independent sport (i.e. an individual sport

such as golf, gymnastics, swimming, etc.) student-athletes showed significantly greater preferences for democratic behavior than their respective Division I and II interdependent (i.e. a team sport such as basketball, baseball, football, etc.) sport counterparts. Finally, Division I open sport (i.e. a stable environment such as golf) student-athletes had significantly greater preferences for autocratic coaching behavior than Division I closed sport (i.e. a changing environment such as tennis) student-athletes. Beam (2002) recommended that future studies incorporate all NCAA competition levels (Divisions I, II, and III) and test the basic tenet of the multidimensional model of leadership.

Task type has also been examined in other international contexts. In a study of Finnish athletes, Liukkonen and Salminen (1990) found that team sport coaches were perceived to be more autocratic, and less democratic and socially supportive than individual sport coaches. Another study compared the preferences and perceptions of three groups of Korean athletes involved in individual sports, combative sports, and team sports (Kim, Lee, and Lee, 1990). The results indicated that the combative sports athletes preferred and perceived more autocratic, social support, and positive feedback behaviors from their coaches than did the other groups. Additionally, individual sport athletes preferred and perceived more democratic behavior from their coaches than the other groups. As noted by Chelladurai (1993), "A general conclusion that can be drawn about the influences of sport type is that as task dependence and/or task variability increase, the need for training and instruction, autocratic behavior, social support, and positive feedback increases (p. 653)."

Culture has also been examined as an influential situational variable of leadership behavior. Terry (1984) polled athletes from Canada, Great Britain, and the United States who were competing in the 1983 Universiade. The results did not indicate any differences between the international athletes regarding preferred leadership behavior. The author explained the result by pointing out the similar cultural backgrounds and sporting ideologies among the three nations. Chelladurai et al. (1987) compared Japanese and Canadian physical education students in modern sports (i.e., basketball, volleyball) and found that the Japanese athletes preferred more democratic behavior and social support than the Canadian athletes. A similar study comparing Japanese and Canadian university athletes found that the Japanese athletes preferred more autocratic behavior and social support while the Canadian athletes preferred significantly more training and instruction (Chelladurai et al., 1988). Furthermore, Japanese athletes perceived their

coaches to be more autocratic, while the Canadian athletes perceived their coaches to provide more training and instruction and to be more democratic and rewarding.

Leadership Behavior Congruency

The Multidimensional Model of Leadership describes leader behavior in terms of required, preferred, and perceived leadership behavior. Required leader behavior includes the situational constraints on behavior such as organizational rules, regulations, policies, goals, formal structure, group task, and social and cultural norms. Preferred leader behavior incorporates the type of behavior athletes would like to receive from their coaches. Perceived leadership behavior describes what is actually done by the leader to influence member performance and satisfaction. In the MML, perceived leadership behavior is interpreted by the athlete perceptions of the coach's behavior.

Perceived leadership behavior as assessed by the sport participant has been shown to be quite different from required leader behavior described by the athletic coach. Horne and Carron (1985) found that Canadian coaches rated themselves higher on training and instruction, democratic behavior, social support, and positive feedback than did their athletes. Further support for these findings was provided by Salminen, Liukkonen, and Telama (1990). In their study of Finnish athletes and coaches, the coaches perceived themselves to be more instructive, socially supportive, and rewarding, but less autocratic than their athletes. Finally, Gordon (1986) discovered that coaches who perceived themselves to be autocratic also perceived themselves to be benevolent. However, the athletes perceived the autocratic coaches to be less benevolent.

Differences in preferred coaching leadership behaviors have also been noted between male and female athletes. Peng (1997) found that male and female basketball players significantly differed in their preferences for democratic behavior (females preferred more democratic behavior) and situation consideration behavior (females preferred more situation consideration behavior), but not in training and instruction, autocratic, social support, and positive feedback behaviors. The author suggested the gender composition of the team may be considered a situational factor that may affect the preference of subjects for specific coaching behaviors.

Jambor and Zhang (1997) examined the differences in leadership behaviors between male and female coaches and among different coaching levels. The results indicated significant differences between the coaching levels (junior high, high school, and college), yet no significant

differences between male and female coaches and no significant interactions between gender and coaching level. High school coaches indicated a higher degree of democratic behaviors when compared to their college coaching counterparts. Junior high school coaches were significantly lower in training and instruction behaviors than were high school and college coaches. Finally, junior high school coaches reported significantly less social support behaviors than did high school and college coaches. The results of the aforementioned studies support the inclusion of the separate dimensions of leadership behavior within the MML.

Consequences of Leader Behavior

The Multidimensional Model of Leadership includes member satisfaction and group performance as consequences of leader behavior. Since leader behavior is comprised of required, preferred, and perceived behavior, satisfaction and/or performance could be limited by any one of the three states of leader behavior. Therefore, the MML posits that a high congruency between required, preferred, and perceived leadership behavior will lead to increased member satisfaction and group performance.

Member satisfaction. In 1978, Chelladurai studied the leadership preferences and perceptions of 216 university-level male athletes in basketball, track and field, and wrestling. Using the team as the level of analysis, he found that the congruence between perceived and preferred autocratic and positive feedback behaviors influenced satisfaction with the coach in a curvilinear fashion. Therefore, the members were less satisfied when the coach's perceived behavior deterred from the preferred behavior in either direction. Chelladurai (1984) later reanalyzed the data with the individual as the unit of analysis and found that the discrepancy between a member's preferences and his/her individual perceptions of coaching behavior was associated with member satisfaction with leadership, team performance, and overall involvement. It is also important to note that the effects of the discrepancies were more pronounced on satisfaction with leadership than on the other facets of satisfaction. These findings were later supported by the work of Horne and Carron (1985), who found that discrepancies in training and instruction, social support, and positive feedback were significant predictors of satisfaction with leadership.

Schliesman (1987) analyzed collegiate track and field athletes and found perceived democratic behavior and social support to be positively related to general satisfaction with leadership. In this particular study, perceived democratic behavior and social support were

slightly better predictors of satisfaction with general leadership than the corresponding discrepancy scores. Weiss and Friedrichs (1986) studied the relationship of university basketball players' perceptions of their coaches' behavior on both the individual and team levels of analysis. At the individual level, the collective leadership variables contributed to athlete satisfaction, but only the perceived democratic behavior and social support dimensions were statistically significant. At the team level of analysis, perceived leadership was predictive of team satisfaction, with positive feedback as the most predictive factor of team satisfaction.

Dwyer and Fischer (1990) discovered that wrestlers were more satisfied with their coaches if higher levels of positive feedback and training and instruction and lower levels of autocratic behavior were exhibited. Perceived democratic behavior and social support were not statistically significantly contributors to satisfaction with leadership. Summers (1983) examined perceived training and instruction, social support, and positive feedback behaviors among 128 lacrosse players. The results indicated that athlete satisfaction was positively correlated with perceived behavior of all three dimensions. The study also measured perceived ability and found that as perceived ability increased, the relationship between social support and players' satisfaction increased. Furthermore, the association between training and instruction and performance decrease with a corresponding increased in perceived ability.

Not all research has universally supported the notion of satisfaction as an outcome of leadership behavior congruency. Riemer and Toon (2001) recently investigated the relationship between leadership and satisfaction among 148 tennis players competing at the NCAA Division I and II Tennis Championships. The results indicated that athlete satisfaction was not dependent upon the congruence between preferred and perceived leadership behavior. The authors suggested that the validity of the congruency hypothesis might be a function of situational conditions or how perceived behavior is operationalized.

Studies have also examined other targets of satisfaction besides leadership. McMillin (1990) found that athletes' perceptions of the collective leader behaviors were significantly related to satisfaction with leadership, but not with satisfaction with personal outcome. A cross-cultural study involving Japanese and Canadian athletes also found athletes' perceptions of the collective leader behaviors to be significantly related to satisfaction with leadership for both cultures (Chelladurai et al., 1988). However, the results were different when satisfaction with personal outcome was the dependent measure. All leader behaviors were still significantly

correlated with personal outcome in the Japanese data, but only perceived training and instruction was associated with personal outcome satisfaction among Canadian athletes.

The previous studies highlight the relationship between leader behavior and satisfaction. As Chelladurai (1993) has noted, "Athletes are satisfied with leadership to the extent that the coach emphasizes (a) training and instruction that enhance the ability and coordinated effort by members, which in turn contributes to task accomplishment; and (b) positive feedback that recognizes and rewards good performance (p. 654)."

Group performance. Although the relationship between leader behavior and member satisfaction has been examined extensively within the construct of the MML, the relationship between leader behavior and group performance has received less attention. The relatively small amount of literature examining performance as a dependent variable may be attributed to the difficulties in objectively defining a measure of performance. A positive relationship between leadership and organizational performance has been noted in a non-sport context (Smith, Carson, & Alexander, 1984), but the primary challenge to finding the same relationship in sport lies in the operational definition of performance. Although numerous statistics are available to assess an athlete's individual performance in an interdependent or team sport, this information is often dependent on the performance of others. Furthermore, global team measures such as win/loss percentages not only reflect team performance, but also incorporate variables such as the quality of opponent, environmental conditions, or even luck.

Weiss and Friedrichs (1986) examined American basketball players and found their perceptions of their coaches' behavior to be associated with performance. Using the team as the unit of analysis, the authors discovered perceived leadership behavior to be predictive of win/loss percentage. Of the leader dimensions, perceived social support was most strongly, yet negatively, correlated with win/loss percentage.

Gordon (1986) compared more successful Canadian university soccer players to their less successful counterparts. The results indicated that university soccer players from more successful teams perceived more training, autocratic, social support, and positive feedback behaviors than less successful players. In a similar study, Serpa, Pataco, and Santos (1991) found that members of the best handball team from the 1988 World Championships perceived their coach to be emphasizing significantly more autocratic behavior, and significantly less

rewarding behavior, social support, and democratic behavior, when compared to the last place handball team members.

Horne and Carron (1985) adopted an interesting approach to capture the performance measure when they asked athletes to rate their own performance. The results showed that athletes' perceptions of positive feedback were positively correlated with their perceptions of their own performance. Although the studies examining the relationship between leader behavior and group performance are small in number, a link between leader behavior and group performance seems warranted at this time

Leadership Behavior Measurement in Sport

In an effort to test the Multidimensional Model of Leadership in a sport setting, Chelladurai and Saleh (1980) developed the Leadership Scale for Sports (LSS). The LSS is a 40-item questionnaire containing five factors: Training and Instruction, Democratic Behavior, Autocratic Behavior, Social Support, and Positive Feedback. Training and Instruction reflects the coach's ability to improve the performance level of the athlete. The extent to which the coach permits participation by the athletes in decision-making is termed Democratic Behavior. Autocratic Behavior indicates the extent to which a coach keeps apart from the athletes and stresses his or her authority in dealing with them. The Social Support factor refers to the extent to which the coach is involved in satisfying the interpersonal needs of the athletes. Finally, the Positive Feedback factor represents the coach's expressions of appreciation and willingness to compliment the athletes for their performance and contribution. Respondents complete the LSS by using a five point Likert scale, which signifies "always", "often", "occasionally", "seldom", and "never".

The LSS can be used to examine (a) the preferences of athletes for specific leader behavior from the coach, (b) the perceptions of athletes regarding the perceived leader behavior of their coach, and (c) the coach's perceptions of his or her own leader behavior. Chelladurai and Riemer (1998) reported the internal consistency estimates of the LSS from several authors, which are depicted in **Table 1**. In addition, the authors also examined construct validity of both versions of the LSS using confirmatory factor analysis techniques (LISREL) and discovered an adequate overall fit.

Table 1. Internal consistency estimates of the LSS (Chelladurai & Riemer, 1998)

	Preferences					**Perceptions**				
Source	TI	DB	AB	SS	PF	TI	DB	AB	SS	PF
Chelladurai (1986)	.76	.71	.56	.51	.57	.87	.78	.49	.70	.61
Chelladurai et al. (1988)	.81	.72	.55	.72	.73	.89	.81	.57	.84	.81
	.77	.67	.55	.78	.77	.88	.75	.59	.84	.91
Chelladurai & Saleh (1980)	.83	.75	.45	.70	.82	.93	.87	.79	.86	.92
Dwyer & Fischer (1988)						.86	.81	.51	.77	.82
Iordanoglou (1990)						.86	.73	.11	.59	.60
Isberg & Chelladurai (1990)	.78	.77	.44	.60	.57	.88	.72	.54	.86	.77
Keehner (1988)						.99	.97	.93	.97	.98
Kim et al. (1990)	.81	.74	.61	.76	.66	.86	.83	.64	.80	.72
Riemer & Chelladurai (1995)	.83	.79	.57	.72	.80	.89	.85	.61	.83	.84
Toon (1996)	.86	.82	.67	.80	.81	.88	.86	.59	.78	.87

Chelladurai and Riemer (1998) suggested the inclusion of additional items to strengthen the reliability of the autocratic scale. These authors noted that a few of the items might actually denote coach aloofness or some other facet rather than autocratic decision-making. In response to the suggestion of Chelladurai and Riemer (1998), Price and Weiss (2000) added the following items into the autocratic subscale: 1) "Does not take into account athletes' suggestions when making decisions", 2) "Controls what athletes can and cannot do", and 3) "Makes decisions regardless of what athletes think" (p. 397). The additional items yielded an improved and adequate internal consistency (.71) for the autocratic subscale. Other researchers have since incorporated the additional autocratic subscale items proposed by Price and Weiss (2000) in their own empirical studies (Al-Tahayneh, 2003).

In a review of coaching leadership studies, Chelladurai (1990) expressed two concerns with the LSS: (a) the items refer to the frequencies rather than the context of coaching leadership behavior, and (b) items were derived from scales in business and industry rather than from the insights of the targeted populations, the coach and the athlete. Furthermore, the scale was originally developed through the involvement of Canadian intercollegiate athletes and some items were not culturally specific to the United States. For example, the LSS has an item stated as "My coach invites athlete home", which could be considered a National Collegiate Athletic Association rule violation in the United States. Therefore, Zhang, Jensen, and Mann (1997) created a Revised Leadership Scale for Sport (RLSS) in an attempt to address the previously stated issues and to identify additional subscales for analysis from the original LSS. The RLSS

is a 60-item questionnaire that contains the five original subscales from the LSS plus an additional subscale entitled Situation Consideration. The Situational Consideration Behavior was proposed as proper coaching behaviors aimed at considering the situational factors (i.e. time, individual, environment, team, and game), setting up individual goals and clarifying ways to reach the goals, differentiating coaching methods at different stages, and assigning an athlete to the right game position. Respondents complete the RLSS by using a five point Likert scale, which signifies "always", "often", "occasionally", "seldom", and "never".

Zhang et al. (1997) claimed to have improved the original LSS in several ways: (a) the items were generated through interviewing the coaches, hence, they are sports specific; (b) the study was conducted in the United States and the regulations of the National Collegiate Athletic Association were considered, thus, the scale is more culturally specific to the United States; (c) involvement of large samples of subjects in a variety of sports improves the generalizability and the application of the scale; (d) the measurement properties of the coaching self-evaluation version were tested and improved; and (e) overall factor structures in determining the constructs of the scale were notably improved. Alpha Reliability tests confirmed factor ratings $\geq .81$ on the Democratic, Positive Feedback, Situation Consideration, Teaching and Instruction, and Social Support Dimensions. However, the Autocratic Behaviors subscale received ratings of .59, .48, and .35, for the versions of athlete preference, athlete perception, and coach self-evaluation, respectively. Jambor and Zhang (1997) later found a reliability rating of .70 for the Autocratic Behaviors subscale in a study examining athlete perception of leader behaviors. Further research regarding the reliability of the Autocratic Behaviors subscale of the RLSS seems warranted.

Summary

This section addressed the basic tenets of several prominent situational contingency leadership theories. These theories led to the development of Chelladurai's (1978, 1993) Multidimensional Model of Leadership (MML), which was synthesized and extended to the athletic context. The MML posits that the congruence of perceived and required leader behaviors and leader behavior preferred by the student-athlete results in enhanced student-athlete performance and satisfaction. Studies addressing the antecedents and consequences of leadership behavior within the framework of the MML were discussed. In general, the studies have supported the conceptualization of the MML.

Motivation

Sage (1977) defined motivation as the direction and intensity of effort. The direction of effort refers to whether an individual seeks out, approaches, or is attracted to certain situations, while the intensity of effort refers to how much effort a person puts forth in a particular situation (Weinberg & Gould, 1999). A popular perspective of motivation posits that behavior can be intrinsically motivated, extrinsically motivated, or amotivated (Deci & Ryan, 1985).

Deci and Ryan's Cognitive Evaluation Theory

Deci and Ryan's (1985) cognitive evaluation theory posits that the critical factor in motivation is not the reward itself, but the person's interpretation of the reward. According to the theory, events that lead to gains in one's feelings of competence and self-determination should increase internal motivation and identification while decreasing introjection, external regulation, and amotivation. Conversely, events that undermine one's feelings of competence or self-determination should lead to a loss of internal motivation and identification, but to an increase in introjection, external regulation, and amotivation. Furthermore, the higher the controlling aspect of a reward, the more intrinsic motivation is undermined. If the controlling aspect of the reward is low, then participants do not see the reward as affecting their behavior, and self-determination is high (Gill, 2000).

Intrinsic motivation refers to engaging in an activity purely for the pleasure and satisfaction derived from doing the activity (Deci, 1975). Previous research has identified three types of intrinsic motivation: Intrinsic Motivation to Know, Intrinsic Motivation toward Accomplishments, and Intrinsic Motivation to Experience Stimulation (Vallerand, Pelletier, Blais, Briere, Senecal, & Vallieres, 1992). Intrinsic Motivation to Know refers to performing an activity for the pleasure and the satisfaction that one experiences while learning, exploring, or trying to understand something new. For example, if a tennis player is inclined to learn a new swinging volley stroke technique simply for the sheer pleasure he experiences when learning something new, he is operating under an Intrinsic Motivation to Know. Intrinsic Motivation toward Accomplishments can be defined as engaging in an activity for the pleasure and satisfaction experienced when one attempts to accomplish or create something. Using the above example, a tennis player exhibits Intrinsic Motivation toward Accomplishments if he or she wants to learn a new swinging volley stroke technique in an attempt to master the elements of the game. Intrinsic Motivation to Experience Stimulation occurs when someone engages in an

activity in order to experience stimulating sensations (i.e. sensory pleasure, aesthetic experiences, as well as fun and excitement) derived from one's engagement in the activity. A tennis player operating under Intrinsic Motivation to Experience Stimulation might adopt Pete Sampras' athletic jumping overhead just for the thrill and excitement he or she might experience while executing this challenging technique in competition.

Extrinsic motivation pertains to a wide variety of behaviors that are engaged in as a means to an end and not for their own sake (Deci, 1975). Recently, researchers have proposed that there are three different types of extrinsic motivation that can be ordered along a self-determination continuum (Ryan, Connell, & Grolnick, 1990). These types include external regulation, introjection, and identification, in order from lower to higher levels of self-determination. External regulation refers to behavior that is controlled by external sources, such as material rewards or constraints imposed by others (Deci & Ryan, 1985). With introjection, the formerly external source of motivation has been internalized such that its actual presence is no longer needed to initiate behavior (Pelletier et al., 1995). Often, these behaviors are reinforced through internal pressures such as guilt or anxiety. For example, a tennis player who continues to participate in the sport because he or she feels embarrassed or ashamed when not in best form is acting through introjection. Identification is in operation when the individual comes to value and judge the behavior as important, and, therefore, performs it out of choice (Pelletier et al., 1995). Although the activity is internally regulated and self-determined, it is still performed for extrinsic reasons. For example, a tennis player who continually participates in the sport because he or she feels it contributes to personal growth and development is operating under identification.

Amotivation is similar to the concept of learned helplessness (Abramson, Seligman, & Teasdale, 1978) in the respect that amotivated individuals do not perceive contingencies between their actions and the outcomes of their actions, which often results in feelings of incompetence and lack of control (Deci & Ryan, 1985). Athletes experiencing amotivation have considerable difficulty identifying good reasons to continue training for their sport. If amotivation continues, the athlete may likely cease participation in the sport altogether.

Sport Motivation Measurement and Research

The Sport Motivation Scale (SMS) originated from the Echelle de Motivation dans le Sport (Briere, Vallerand, Blais, & Pelletier, 1995), a scale that was developed in the French language. Using cross-cultural validation procedures (Vallerand, 1989), the scale was translated into English for research purposes (Pelletier, Fortier, Vallerand, Tuson, Briere, & Blais, 1995). The purpose of the SMS is to assess various components of intrinsic motivation and extrinsic motivation, and amotivation toward sport. The SMS is a 28-item questionnaire containing seven subscales that assess three types of intrinsic motivation (Intrinsic Motivation to Know, Intrinsic Motivation Toward Accomplishments, and Intrinsic Motivation to Experience Stimulation), three forms of regulation for extrinsic motivation (Introjection, Identification, and External Regulation), and an Amotivation subscale. Respondents complete the SMS by using a seven point Likert scale.

As mentioned previously, the SMS was originally constructed in French, and preliminary and validation studies were conducted with approximately 600 athletes (M age = 18.4 years) representing eight different sports (Briere et al., 1995). A mean Cronbach alpha internal consistency coefficient of .82 was reported, and a mean test-retest reliability coefficient of .69 was found across a one-month interval. Confirmatory factor analysis supported the hypothesized seven-factor structure of the instrument. Convergent validity was supported using measures of interest toward sport, sport satisfaction, and positive emotions experienced during sport practice. The researchers who created the English version of the SMS reported similar reliability and validity results (Pelletier et al., 1995). Cronbach alpha internal consistency coefficients (N=593) ranged from .63 (Identification scale) to .80 (Intrinsic Motivation to Know and Intrinsic Motivation toward Accomplishments) with a mean alpha coefficient of .75 reported. Internal consistency coefficients ranged from .71 to .85 on a pretest and from .69 to .85 on a posttest of the SMS given to 51 soccer players. Test-retest reliability coefficients ranged from .58 to .84 (M test-retest reliability coefficient of .70) for these same soccer athletes across a 5-week interval. Confirmatory factor analysis supported the hypothesized seven-factor structure of the SMS (Connelly, 1999). Also, intercorrelation coefficients among the three intrinsic motivation subscales were moderate, and intercorrelations among the seven scales displayed a simplex pattern, thus supporting the construct validity of the SMS (Li & Harmer, 1996).

The convergent validity of the SMS was supported in that participants' responses to the SMS were related to their responses on measures of perceived competence and to four forms of coaches' interpersonal behavior. Also, these participants' responses to the SMS were related to measures of motivational consequences (i.e. distraction during the activity, effort, and future intentions of practicing the activity). Martens and Webber (2002) found some evidence for the reliability and validity of the SMS in a college-aged population, but also uncovered some problems with the hypothesized SMS model, including a lack of fit for the model and its components. The authors predicted that future evolution of the model might include the integrated regulation component of the self-determination continuum. A recent study has found mixed support for validity of the SMS outside of the typical college-aged population (Riemer, Fink, & Fitzgerald, 2002). However, it is important to note that the SMS is still currently the most widely accepted measure of motivation within the sporting domain.

Based on the results of previous research, Vallerand and Losier (1999) proposed a motivational sequence that integrated much of the intrinsic and extrinsic motivation literature in sport (**Figure 2**). The model posits that social factors precede psychological mediators, which lead to types of motivation, which result in consequences. Proposed social factors include success/failure, competition/cooperation, coach behavior, etc. The psychological mediators include perceptions of competence, autonomy, and relatedness. The types of motivation are described as intrinsic, extrinsic, and amotivation. Finally, possible consequences include affect, sportspersonship, persistence, etc.

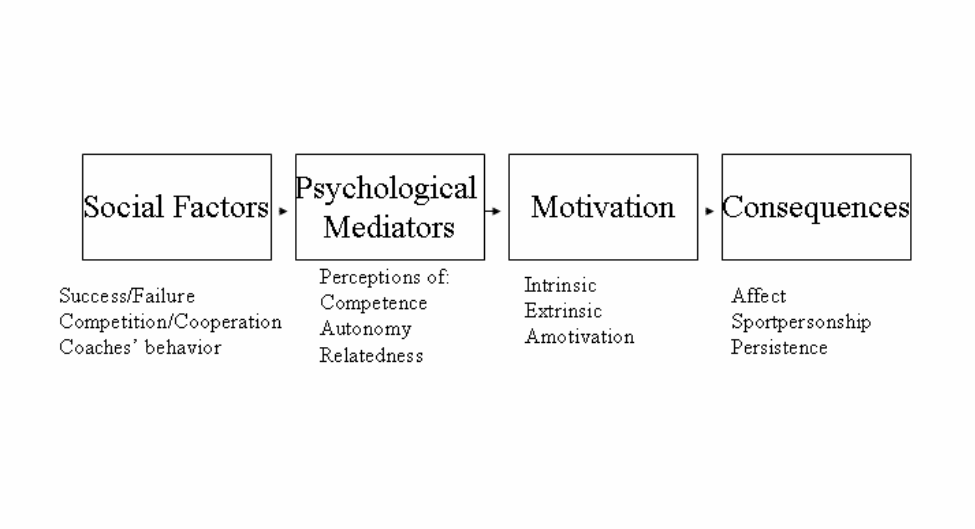

Figure 2. Vallerand and Losier's (1999) proposed motivational sequence

Fortier, Vallerand, Briere, and Provencher (1995) examined the relationship of competitive and recreation sport structures and gender to athlete sport motivation. Using a sample of 399 French-Canadian athletes (collegiate: 220; recreational: 179), the authors uncovered several important findings. First, the results revealed that competitive athletes demonstrated less intrinsic motivation to experience stimulation and less intrinsic motivation to accomplish things than recreational athletes, while exhibiting more identified regulation and more amotivation than this group. The authors explained this finding in respect to the increased pressure to win experienced by the competitive athletes. Second, female athletes were more intrinsically motivated to accomplish things and exhibited more identified regulation than male athletes, while displaying less external regulation and less amotivation than this group. This finding was supported by prior research (Vallerand & Bissonnette, 1992; Vallerand, Blais, Briere, & Pelletier, 1989; Vallerand, Pelletier, Blais, Briere, Senecal, & Vallieres, 1992).

A similar study examined the relationship between motivation and elite performance using 98 (M = 63; F = 35) Bulgarian athletes (Chantal, Guay, Dobreva-Martinova, & Vallerand, 1996). The participants' athletic performances in national and international events over the prior two years were documented and compared. The results indicated that, in comparison with less successful athletes, title and medal holders displayed higher levels of non-self-determined extrinsic motivation and higher levels of amotivation. Furthermore, the motivation of female athletes was more strongly characterized by intrinsic motivation when compared to their male counterparts.

Other studies analyzing the differences in motivation between skill levels have found conflicting results when compared with the previous two studies. Sloan and Wiggins (2001) studied the motivational differences between American collegiate and professional football players. Using a sample of 61 collegiate (NCAA Division I-AA) and 60 professional (NFL) players, the researchers found higher overall scores on the intrinsic motivation subscales in comparison to the extrinsic subscales. Furthermore, the professional football players reported significantly higher levels of intrinsic and extrinsic motivation than the collegiate football players. A similar study involving scholarship and non-scholarship collegiate track and field athletes found no interaction between gender and scholarship status, or scholarship versus non-scholarship athletes (Miller, 2000). However, the author did report that males scored

significantly higher than females with respect to the subscale of external regulation. Therefore, males were more motivated to participate for material rewards.

Another study explored the degree to which intercollegiate athletes were intrinsically motivated to participate in their sport (MacDougall, 2000). A total of 146 athletes from two Midwestern colleges completed a scale assessing sport motivation. The results indicated that Division I athletes possessed higher levels of intrinsic motivation to know and intrinsic motivation toward accomplishments than Division III athletes. In addition, Division I non-scholarship athletes had significantly higher levels of intrinsic motivation to know and intrinsic motivation toward accomplishments than Division III non-scholarship athletes. Finally, the author found no gender differences in the sampled population.

Relationship between Leadership and Motivation

In the Coaches Guide to Sport Psychology, Rainer Martens (1987) stated, "Leadership emphasizes interpersonal relationships and has direct impact on motivation, whereas management necessarily does not (p. 34)." Furthermore, according to Kotter (1988), "Effective leadership for some activity in complex organizations is the process of creating a vision of the future that takes into account the legitimate long-term interests of the parties involved in that activity; of developing a rational strategy for moving toward that vision; of enlisting the support of the key power centers whose cooperation, compliance, or teamwork is necessary to produce that movement; and of motivating highly that core group of people whose actions are central to implementing the strategy." Therefore, a primary anticipated outcome of effective leadership is a core group of motivated followers.

Despite the supposed positive affects of leadership on follower motivation, very few studies have examined the direct relationship of leadership and motivation. Black and Weiss (1992) studied the relationships between perceived coaching behaviors and motivation in competitive age-group swimmers. The authors concluded that coaches who were perceived as giving more frequent information following desirable performances, and more frequent encouragement combined with information following undesirable performances, were associated with athletes who perceived higher levels of success, competence, enjoyment, and preference for optimally challenging activities. The results supported the notion that the motivation of young athletes was significantly related to the quantity and quality of coaching feedback they receive for performance successes and errors.

Amorose and Horn (2000) examined the relationships among athletes' intrinsic motivation, gender, scholarship status, perceptions of the number of their teammates receiving scholarships, and perceptions of their coaches' behavior. A survey of 386 Division I athletes from a variety of sports revealed that (a) scholarship athletes reported higher levels of intrinsic motivation than did non-scholarship athletes, (b) male athletes reported higher intrinsic motivation than did female athletes, and (c) perceived coaching behaviors were related to athletes' intrinsic motivation. Athletes with higher intrinsic motivation perceived that (a) their coaches exhibited a leadership style that emphasized training and instruction and was high in democratic behavior and low in autocratic behavior, and (b) their coaches provided high frequencies of positive and informationally based feedback and low frequencies of punishment-oriented and ignoring behaviors.

Finally, a recent study conducted by Charbonneau, Barling, and Kelloway (2001) examined the mediating role of intrinsic motivation between the relationship of transformational leadership and sports performance. A survey of 168 athletes along with performance evaluations from their respective coaches revealed a mediating role of intrinsic motivation between transformational leadership and sports performance. Such a proposition suggests that transformational leadership may actually enhance the intrinsic motivation of subordinates.

Summary

The previous section details Deci and Ryan's (1985) Cognitive Evaluation Theory, which posits that behavior can be intrinsically motivated, extrinsically motivated, or amotivated. Intrinsic motivation refers to engaging in an activity purely for the pleasure and satisfaction derived from doing the activity (Deci, 1975). Extrinsic motivation pertains to a wide variety of behaviors that are engaged in as a means to an end and not for their own sake (Deci, 1975). Amotivated individuals do not perceive contingencies between their actions and the outcomes of their actions, which often results in feelings of incompetence and lack of control (Deci & Ryan, 1985). Researchers have examined the relationships of competitive and recreation sport structures and gender to athlete sport motivation (Fortier, Vallerand, Briere, & Provencher, 1995), motivation and elite performance (Chantal, Guay, Dobreva-Martinova, & Vallerand, 1996), and differences in motivation between skill levels (Sloan and Wiggins, 2001; Miller, 2000; MacDougall, 2000). The results support the framework of Deci and Ryan's (1985) Cognitive Evaluation Theory and the notion of defining motivation in terms of intrinsic

motivation, extrinsic motivation, and amotivation. A recent study conducted by Charbonneau, Barling, and Kelloway (2001) supported a mediating role for intrinsic motivation between the relationship of transformational leadership and sports performance.

Commitment

The majority of research on commitment has focused on the construct with an organization as the target. Indeed, much of what we know about commitment stems from organizational behavior research. Organizational commitment refers to the extent to which workers in an organization are committed to the organization, its goals and values, and its processes (Chelladurai, 1999). Organizational commitment has been defined in terms of affective attachment to goals (Buchanan, 1974), the relative strength of an individual's identification with and involvement in a particular organization (Mowday, Porter, & Steers, 1982), and links of extraneous interest with a consistent line of activity (Becker, 1960).

Meyer and Allen (1997) described organizational commitment in terms of three distinct bases of commitment: affective commitment, continuance commitment, and normative commitment. In their words, "Affective commitment refers to the employee's emotional attachment to, identification with, and involvement in the organization. Employees with a strong affective commitment continue employment with the organization because they *want* to. Continuance commitment refers to an awareness of the costs associated with leaving the organization. Employees whose primary link to the organization is based on continuance commitment remain because they *need* to. Finally, normative commitment reflects a feeling of obligation to continue employment. Employees with a high level of normative commitment feel that they *ought* to remain with the organization" (Meyer & Allen, 1991, p. 67). Organizations generally strive to attract and retain employees with affective commitment to their organization since that construct often involves an employee's internal alignment with organizational goals and missions.

Sport Commitment Model

Recently, a major advancement in the integration of commitment into the sporting context was achieved with the introduction of the Sport Commitment Model (Scanlan et al., 1993). The authors defined sport commitment as a psychological state representing the desire to resolve or continue sport participation. Sport commitment was posited as having five

determinants including sport enjoyment, involvement alternatives, personal investments, social constraints, and involvement opportunities (**Figure 3**).

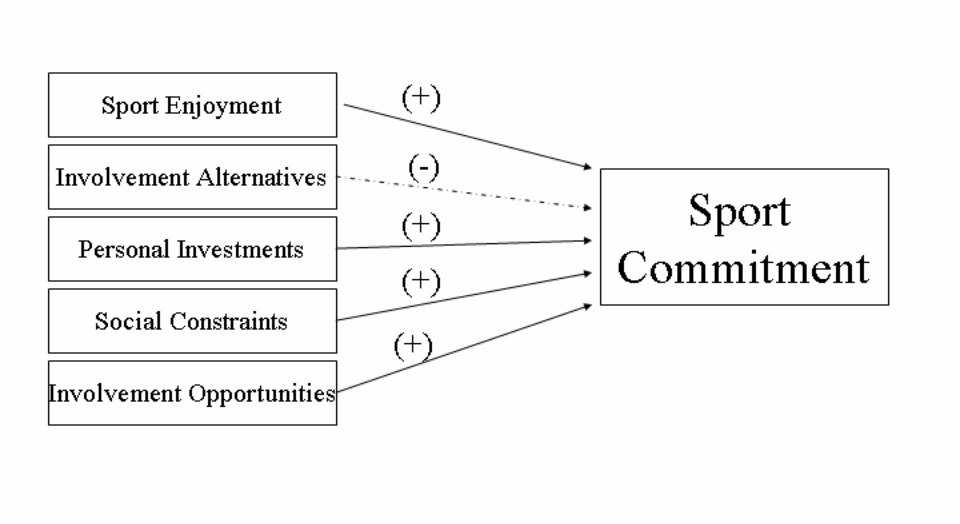

Figure 3. The Sport Commitment Model

Sport enjoyment is defined as a positive affective response to the sport experience that reflects generalized feelings such as pleasure, liking, and fun. Involvement alternatives are defined as the attractiveness of the most preferred alternative(s) to continued participation in the current endeavor. The personal resources that are put into the activity which cannot be recovered if participation is discontinued are explained within the personal investments category. Social constraints are the social expectations or norms that create feelings of obligation to remain in the activity. Involvement opportunities are the valued opportunities that are present only through continued involvement. Overall, sport enjoyment, personal investments, social constraints, and involvement opportunities were predicted to have a positive relationship to sport commitment, while the presence and strength of involvement alternatives were posited as having a negative relationship to sport commitment.

Sport Commitment Measurement and Research

In an effort to test the concepts associated with the Sport Commitment Model, researchers developed the Sport Commitment Model Scale (Scanlan, Simons, Carpenter, Schmidt, & Keeler, 1993). The purpose of the Sport Commitment Model Scale (SCMS) is to assess the determinants of sport commitment, "a psychological construct representing the desire

and resolve to continue sport participation." These determinants include an athlete's sport enjoyment, the attractiveness of involvement alternatives, personal investments in participation, social constraints to continue participating in the sport activity, and involvement opportunities afforded by continued participation. The 14-item SCMS measures sport commitment, sport enjoyment, social constraints, and involvement opportunities. Respondents complete the SCMS by using a five point Likert scale, with 1 signifying "not at all/none or nothing" and 5 representing "very much or a lot."

Using responses from 178 Little League athletes (n=95 females/83 males), the researchers reported Cronbach alpha coefficients of .89 for Sport Commitment, .95 for Sport Enjoyment, .88 for Social Constraints, and .80 for Involvement Opportunities. Confirmatory factor analyses across diverse samples supported the validity of items to measure the sport commitment, sport enjoyment, social constraints, and involvement opportunities constructs based on the responses of 1,342 participants of diverse ethnic backgrounds in three different youth sports programs (n=553 male football players; n=322 male and n=294 female youth soccer players; n=173 female volleyball players).

Structural equation modeling results demonstrated that the sport commitment model was a good fit of the data (CFI = .981), as the findings accounted for 68% of the commitment variance (Carpenter, Scanlan, Simons, & Lobel, 1993). It was determined that sport enjoyment, personal investments, and, to a lesser extent, involvement opportunities were the most salient factors, but sport commitment was negatively related to social constraints, which contradicts the previous hypothesis. It is important to note that the involvement opportunities component was excluded from the structural equation modeling analysis in this study due to measurement problems.

A study involving team sports and the deliberate theory of practice tested the tenets of the Sport Commitment Model (Helsen, Starkes, & Hodges, 1998). The study utilized international, national, and provincial soccer and field hockey players and had them recall the amount of time they spent in individual and team practice, sport-related activities, and everyday activities at the start of their career and every three years since. Furthermore, the athletes were asked to rate those activities in terms of their relevance for improving performance, effort and concentration required, and enjoyment. Since sport enjoyment is highly related to sport commitment, Scanlan's Sport Commitment Model (SCM) was suggested to be a significant piece of the sport

expertise puzzle. With regard to support for a theory of expertise based solely on deliberate practice, the authors opined, "Much of the data would suggest that the most critical part of producing skilled athletes is to find individuals who are highly motivated and likely to persist over the long duration required to produce an expert (p. 32)." The results of the study supported this position, and the authors concluded that the SCM "provides an outline of the motivational structure and precursors necessary for the development of expert performance (p. 33)." A recent review has confirmed the importance of SCM in relation to the development of sport expertise (Starkes, 2000).

Weiss, Kimmel, and Smith (2001) recently published a tennis-specific study in the realm of sport commitment that posited sport enjoyment as a mediating variable in the SCM. The authors tested both an original version of the SCM and a revised model of the SCM where enjoyment was a mediator of the relationships between determinants and level of commitment (**Figure 4**).

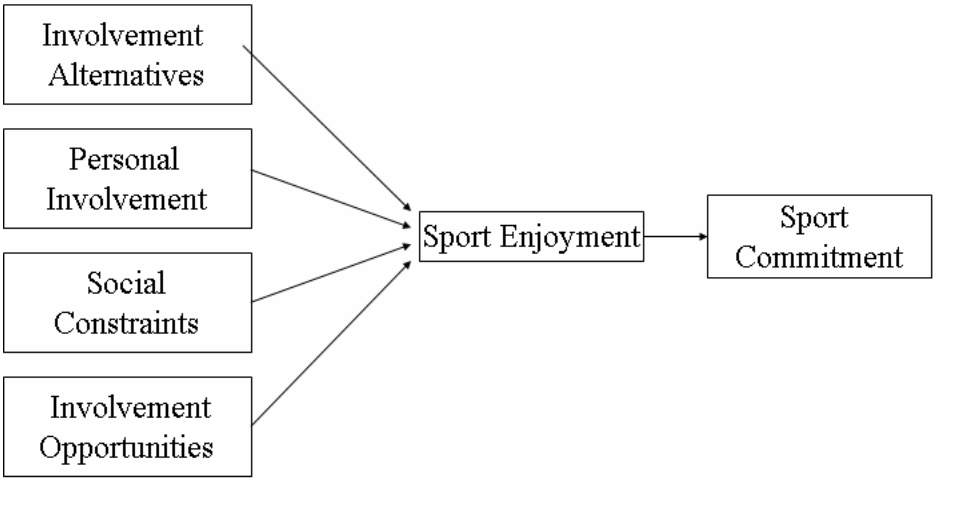

Figure 4. Proposed alteration of the Sport Commitment Model

Both models included a new proposed precursor to sport commitment entitled perceived competence. Perceived competence is a reflection of the athlete's self-efficacy toward a certain sport. Carpenter and Coleman (1998) provided empirical support for the addition of this determinant in a longitudinal study of elite youth cricketers' commitment. A total of 198 junior tennis players (M = 114; F = 84) ranging in age from 10 to 18 years participated in the current study by completing measures of sport commitment, enjoyment, constraints, support, personal investments, attractiveness of alternative activities and perceived tennis competence. The model testing revealed alpha values that were greater than the recommended .70 criterion for all measures except perceived competence, which was subsequently removed from all further analysis. The results provided support for both versions of the model; however, the alternative model was accepted as most theoretically appealing because determinants of commitment and sources and consequences of sport enjoyment were accounted for within the larger conceptual model.

Relationship between Leadership and Commitment

Research has shown that leadership, as an organizational characteristic, is predictive of commitment (Glisson & Durick, 1988; Morris & Sherman, 1981). In general, the research on the relationship between leadership and commitment is organized into two leadership constructs: leadership behaviors and transformational leadership. The Ohio State Leadership Studies characterized leadership behaviors into two factors termed consideration and initiation of structure (Bass, 1981). Consideration comprised the extent to which a leader exhibited concern for the welfare of the other members of the group. Initiation of structure referred to the extent to which a leader initiated activity in the group, organized it, and defined the way work was to be done. Organizational commitment has been shown to be positively related to consideration and initiating structure (Hunt & Liesbscher, 1973; O'Reilly & Roberts, 1978; Sheridan & Vredenburgh, 1978).

Transformational leaders are characterized as having the ability to arouse subordinate commitment (Bass, 1985; Hater & Bass, 1988). However, few studies have examined the relationship between leadership and commitment through the context of transformational leadership. Koh, Steers, and Terborg (1995) found that transformational leadership had significant and substantial add-on effects to transactional leadership in the prediction of organizational commitment in an educational setting. In a sport setting, Kent and Chelladurai

(2001) found transformational leadership to be significantly related to affective and normative commitment in an intercollegiate athletic department.

Yousef (2000) studied the role of organizational commitment in the relationships of leadership behavior with the work outcomes of job satisfaction and job performance in a non-western country where multiculturalism was a dominant feature of the workforce. The results indicated that those who perceived their superiors as adopting consultative or participative leadership behavior were more committed to their organizations, more satisfied with their jobs, and maintained high levels of performance. The results also supported the role of organizational commitment as a mediator in the relationship between leadership behavior and job satisfaction and job performance.

Summary

The preceding section discusses Meyer and Allen's (1997) three bases of commitment: affective commitment, continuance commitment, and normative commitment. Recently, a Sport Commitment Model (SCM) was introduced that defined sport commitment as a psychological state representing the desire to resolve or continue sport participation (Scanlan et al., 1993). Sport commitment was posited as having five determinants including sport enjoyment, involvement alternatives, personal investments, social constraints, and involvement opportunities. Research has supported the SCM in its original form (Helsen, Stakes, & Hodges, 1998; Starkes, 2000), and recent attempts to add an additional determinant to the SCM have supported the use of the original determinants of the SCM (Weiss, Kimmel, and Smith, 2001; Carpenter and Coleman, 1998). Research has shown that leadership, as an organizational characteristic, is predictive of commitment (Glisson & Durick, 1988; Morris & Sherman, 1981), and that organizational commitment can play a mediating role in the relationship between leadership behavior and job satisfaction and job performance (Yousef, 2000).

Satisfaction

Although many studies can be found in the academic literature regarding job satisfaction, few studies have specifically examined athlete satisfaction as a separate construct. Athlete satisfaction is a positive affective state resulting from a complex evaluation of the structures, processes, and outcomes associated with the athletic experience (Chelladurai & Riemer, 1997). The level of an athlete's satisfaction is determined by the discrepancy between what is wanted by

the athlete and the perception of what is received within the psychological, physical, and environmental domains.

Furthermore, Chelladurai and Riemer (1997) suggested that athlete satisfaction may prove to be the ultimate measure of organizational effectiveness of an athletic program based on the following unique features of athletics. First, the measures of performance in athletics are deficient and/or contaminated by such factors as luck, an opponent's extraordinary performance, a referee's mistake, and so on. Second, activities engaged in during the pursuit of excellence cannot be solely judged by measures of wins and losses since every contest results in a winner and a loser. Third, the win-loss records pertain only to the periods of performance (i.e. the actual competitions), which does not encompass the total athletic experience. Therefore, the authors concluded, "It is imperative that evaluation of an athletic program and its coaches should be based on athlete satisfaction in addition to measures of performance such as win-loss records" (Chelladurai & Riemer, 1997).

Facets of Athlete Satisfaction

An early study identified two facets of athlete satisfaction as satisfaction with personal outcome and satisfaction with leadership (Chelladurai et al., 1988). However, Chelladurai and Riemer (1997) recently created a comprehensive classification of the facets of athlete satisfaction. The classification scheme incorporates team and individual outcomes, team and individual processes, and social processes.

Team outcomes are further classified into task and social outcomes. The task outcomes include team performance, team goal attainment, team performance improvement, team maturity and group integration. Team performance is often measured by winning percentages or even point differentials. Team goal attainment refers to the accomplishment of predetermined team goals over a set period of time. Team performance improvement may be measured via improvements in overall winning percentage, league rankings, or perceptions of performance improvement. Team maturity refers to the growth and development of the team members in terms of health, fitness, ability, mastery of skills, tactics, and strategies of the sport. Group integration refers to a state characterized by a sense of solidarity shaped by (a) congruent orientations toward the group's purposes and processes, (b) understanding and acceptance of strategies and tactics, (c) recognition and respect for each other's strengths and contributions toward the group purposes, and (d) a collective determination to put forth the best efforts toward

that end. Interpersonal harmony is considered to be a social outcome and refers to the degree to which members of the team get along well as a group and provide social support to each other.

The individual outcomes are also further categorized into task and social outcomes. The task outcomes include personal performance, personal goal attainment, personal performance improvement, personal growth, individual task role, and personal immersion. Personal performance, goal attainment, and performance improvement are similar to the previously mentioned team task outcomes except that they function on an individual level. Personal growth refers to individual psychological and mental growth including increased understanding of the strategies and tactics of the sports, and developing psychological and social skills to be successful in athletics. Individual task role includes the contributions an athlete makes to his or her team along with the function of the athlete's role in the group's task efforts. Personal immersion refers to the extent to which the athlete is satisfied with personal involvement with the sport. The social outcomes include belongingness, friendship, and the social role. A sense of belonging to the group and feeling of acceptance are included in the belongingness social outcomes factor. Friendship reflects the affinities developed with individual members of the team. Finally, social role includes the roles played by individuals in the social network or structure within the group.

The team processes are broken down into task and social processes. Strategy selection, mobilization, deployment, practice, competition tactics, equitable treatment, ethics, team effort and coordination, facilities/equipment, budget, ancillary support, and community support comprise the task processes. Strategy selection refers to the extent to which the athlete is satisfied with the coach's selection of specific sport strategies. Mobilization refers to the extent talented athletes are recruited as members of the team. Deployment is the effectiveness of the coach in using the available talent in a coordinated manner to achieve success in athletic competitions. Practice refers to the extent to which athletes perceive practice sessions to be appropriate and effective. Competition tactics refer to the extent to which athletes are satisfied with tactical adjustments that are made during the process of competition. Equitable treatment involves the athlete's perception of equity in the distribution of resources, the procedures adopted in such distributions, and the fairness system in general. The athletes' reaction toward the management of ethical dilemmas is incorporated into the ethics dimension. Team effort and coordination refers to the extent to which an athlete perceives his or her teammates to be putting

forth their best efforts in a coordinated manner for the success of the team. The facilities/equipment factor measures the extent to which athletes are provided with appropriate facilities and equipment. Direct monetary support is encompassed within the budget dimension. Ancillary support includes medical support, academic counseling, game management, and so forth. The implicit and explicit support from the community (i.e. students, faculty/staff, and fans) is defined within the community support factor. The social processes include decision participation and loyalty support. Decision participation refers to the extent to which the coach engages the athletes in decision-making relevant to the team and its performance. Loyalty support refers to an athlete's satisfaction with the loyalty demonstrated by the coach and/or administration toward the team as a whole.

The individual-oriented processes are dichotomized into task and social processes. The task processes include ability utilization, training/instruction, positive feedback, personal inputs, team contribution, recognition, financial support, and family support. Ability utilization is concerned with how the coach uses the abilities of an individual athlete. Training/instruction refers to the extent to which a coach engages in training and instruction, which has been identified as the most significant dimension of leader behavior assessed by Chelladurai and Saleh's (1980) Leadership Scale for Sports. Positive feedback is the provision of reinforcements for successful performance of tasks assigned to individual athletes during games and practice sessions. Personal input refers to the satisfaction an athlete has with the effort he or she has put forth during practice sessions and competitions. The possibility that team members may serve to train and instruct the individual athlete, offer positive feedback, and help other athletes to understand how his or her effort fits in with the rest of the team's efforts is included within the team contribution dimension. Recognition refers to the extent to which an athlete is satisfied with the recognition that he or she received from the coach, teammates, and others with respect to what he or she contributes to the task processes. An athlete's satisfaction with the amount of his or her individual scholarship is included within the financial support facet. Family support reflects the degree to which an athlete is satisfied with the amount of family support he or she receives regarding athletic endeavors. The social processes include social support and loyalty support. Social support is described as coaching behavior characterized by concern for the individual athlete that is supportive in nature. Loyalty support refers to one's satisfaction with the level of loyalty the coach and/or teammates demonstrate toward the athlete as an individual.

Chelladurai and Riemer's (1997) classification of the facets of athlete satisfaction provide the foundation for further research in this area. The scheme was presented in two viewpoints. The first paradigm regrouped the facets of athlete satisfaction based on the agents who control the processes leading to the desired outcomes (**Table 2**).

Table 2. Controlling agents of athlete satisfaction (Chelladurai & Riemer, 1997)

Self	Coaches	Team/Teammates	Administration	Family/Community
Individual performance	Ability utilization	Team performance	Facilities	Community support
Personal goal attainment	Training & instruction	Team goal attainment	Budget	Family support
Performance improvement	Positive feedback	Performance improvement	Ancillary support	
Personal immersion	Strategy selection	Team maturity	Compensation	
Personal growth	Mobilization	Group integration	Team loyalty support	
Personal inputs	Deployment	Team effort coordination		
Task role	Practice	Team contribution		
Social role	Competition tactics	Friendship		
	Equitable treatment	Belongingness		
	Ethics	Interpersonal harmony		
	Decision participation	Recognition		
	Recognition	Social support		
	Social support	Individual loyalty support		
	Individual loyalty support			
	Team loyalty support			

The second reorganization was based on whether the facets referred to intrinsic or extrinsic rewards (**Table 3**). These viewpoints provide a basis for future studies within the realm of athlete satisfaction.

Table 3. Athlete satisfaction in terms of intrinsic and extrinsic motivation (Chelladurai & Riemer, 1997)

Intrinsic	**Extrinsic**
Individual performance	Ability utilization
Personal goal attainment	Training and instruction
Individual performance improvement	Positive feedback
Personal growth	Strategy selection
Task role	Mobilization
Personal immersion	Deployment
Personal inputs	Practice
	Competition tactics
	Equitable treatment
	Ethics
	Team effort coordination
	Facilities
	Budget
	Ancillary support
	Community support
	Team contribution
	Recognition
	Compensation
	Family support
	Social support
	Individual loyalty support
	Team loyalty support
	Decision participation
	Interpersonal harmony
	Belongingness
	Friendship
	Social role
	Team performance
	Team goal attainment
	Team performance improvement
	Team maturity
	Group integration

Athlete Satisfaction Measurement and Research

The Athlete Satisfaction Questionnaire (Riemer & Chelladurai, 1998) was developed to measure the facets of satisfaction identified previously by Chelladurai and Riemer (1997). The Athlete Satisfaction Questionnaire (ASQ) is a 56-item questionnaire that contains 15 dimensions of athlete satisfaction. These subscales include individual performance, team performance, ability utilization, strategy, personal treatment, training and instruction, team task contribution, team social contribution, ethics, team integration, personal dedication, budget, medical personnel, academic support services, and external agents. Respondents complete the ASQ by using a seven point Likert scale.

Using a sample of 614 Canadian university athletes (basketball, hockey, and volleyball), the researchers reported Cronbach alpha coefficients ranging from .78 to .95 (M = .88), and 12 of the 15 subscales were higher than .85. All internal consistency coefficients were much higher than the value of .70 suggested by Nunnally and Bernstein (1994). Subscales measuring the constructs of "Desire to Quit" and "Team Commitment" (Riemer & Chelladurai, 1997) along with the Negative Affectivity Scale (Levin & Stokes, 1989) were used to assess criterion validity. The results of the correlation analysis supported the predictive validity of the ASQ.

Chelladurai and Riemer's (1997) classification of the facets of athlete satisfaction has received a modest amount of attention in the literature despite its recent introduction. Two of the studies measured the impact of leadership upon satisfaction. The first study measured the practice of transformational leadership among Malaysian high school coaches and its impact on athlete satisfactions with individual performances (Yusof, 2002). The author administered the Transformational Leadership Behavior Inventory and the ASQ to 162 subjects (soccer = 94; netball = 62; 6 = no sport indication). The results indicated that transformational leadership behaviors of the soccer and netball coaches were significantly related to player satisfactions. In addition, athletes were more likely to be satisfied with their performances if they were in good academic standing, and if they had a local Malaysian coach.

The second study investigated the MML congruency hypothesis, and the member characteristics hypothesis relating to ability and gender (Riemer & Toon, 2001). A total of 148 NCAA Division I and II tennis players completed measures assessing leadership behavior and athlete satisfaction. The results indicated that athlete satisfaction was not dependent on the congruence between preferred and perceived leadership behavior. In addition, the athlete's level

of ability did affect preferences for leadership behavior. Furthermore, while athlete gender was responsible for some variance in preferences for autocratic behavior and positive feedback behavior, the gender of the athlete's coach had a significant effect on the athlete's preferences for social support behavior.

Another related study involving tennis players examined the motivational climate and goal orientations as predictors of perceptions of improvement, satisfaction, and coach ratings (Balaguer, Duda, & Crespo, 1999). The authors examined 219 competitive (intermediate = 70; advanced = 124; professional = 25) Spanish tennis players. The results indicated that the players' reported satisfaction with their competitive results for the year and current level of play was negatively associated with a perceived ego-involving climate and positively associated with perceptions of a task-involving atmosphere. Therefore, tennis coaches should try to create an environment that is more task-involving and less ego-involving to enhance athlete satisfaction.

Relationship between Leadership and Satisfaction

Studies examining the relationship between leadership and satisfaction have defined satisfaction in terms of satisfaction with one's job and leader. Job satisfaction is the overall attitude an individual has toward his or her job. Research has supported that leadership is a general determinant of job satisfaction as a job characteristic (Bateman & Strasser, 1984; Glisson & Durick, 1988). Specific studies examining leadership behaviors have also determined that job satisfaction is positively related to consideration and initiating structure leadership behaviors (Downey, Sheridan, & Slocum, 1975; Dubinsky, Childers, Skinner, & Gencturk, 1988; Halpin & Winer, 1957; House, Filley, & Kerr, 1971; Hunt & Liesbscher, 1973; Osborn & Hunt, 1975b; Szilagyi & Keller, 1976; Teas, 1983; Teas & Horrell, 1981; Yunker & Hunt, 1976).

The leader can also serve as the target of follower satisfaction. Research has shown that leader behavior can have a profound and consistent influence on several facets of subordinate satisfaction (Bass, 1985; Vroom & Yago, 1988). Other studies have indicated that transformational leadership can have significant add-on effects to transactional leadership in predicting subordinate satisfaction with the leader (Bass, 1985; Hater and Bass, 1988; Koh, Steers, & Terborg, 1995; Waldman, Bass, & Einstein, 1987).

In a sport setting, Schliesman (1987) surveyed forty male university level track and field athletes and found a significant positive linear relationship between leadership discrepancy scores (preference and perceptions) and satisfaction with leadership. These results supported the

findings of Friedrichs (1984) who noted the same significant relationship in a sample of 251 male collegiate basketball players. In a survey of 34 athletic directors and 142 head coaches, Davis (2002) recently discovered a significant association between head coaches' perception of the leadership style of their respective athletic directors and their level of satisfaction. The results of the above studies support the existence of a relationship between leadership behavior and satisfaction.

Summary

Athlete satisfaction is a positive affective state resulting from a complex evaluation of the structures, processes, and outcomes associated with the athletic experience, and it may prove to be the ultimate measure of organizational effectiveness of an athletic program (Chelladurai & Riemer, 1997). Chelladurai and Riemer (1997) classified athlete satisfaction into the following four facets: team and individual outcomes, team and individual processes, and social processes. Team outcomes are further classified into task and social outcomes, and individual outcomes are also further categorized into task and social outcomes. The team processes are broken down into task and social processes, and individual-oriented processes are dichotomized into task and social processes. Thus far, researchers have examined the impact of leadership upon satisfaction in sport-specific settings (Yusof, 2002; Riemer & Toon, 2001), while other studies have suggested a positive relationship between leadership and satisfaction using other methods in non-sport settings (Bass, 1985; Downey, Sheridan, & Slocum, 1975; Halpin & Winer, 1957; Hater and Bass, 1988; House, Filley, & Kerr, 1971; Hunt & Liesbscher, 1973; Koh, Steers, & Terborg, 1995; Osborn & Hunt, 1975b; Szilagyi & Keller, 1976; Teas, 1983; Teas & Horrell, 1981; Waldman, Bass, & Einstein, 1987; Yunker & Hunt, 1976).

Review of Literature Summary

The proceeding literature review addressed the basic tenets of Chelladurai's (1978, 1993) Multidimensional Model of Leadership (MML), which was synthesized and extended to the athletic context. The MML posits that the congruence of perceived, required, and preferred leader behaviors results in enhanced group performance and member satisfaction. Studies addressing the antecedents (member, leader, and situational characteristics) and consequences (group performance and member satisfaction) of leadership behavior within the framework of the MML were discussed. In general, the studies have supported the conceptualization of the MML and the leadership behavior congruency hypothesis (Chelladurai, 1978; 1984; Chelladurai et al.,

1988; Dwyer & Fischer, 1990; Gordon, 1986; Horne & Carron, 1985; McMillin, 1990; Riemer & Chelladurai, 1995; Schliesman, 1987; Serpa, Pataco, & Santos, 1991; Summers, 1983; Weiss & Friedrichs, 1986).

The review also details Deci and Ryan's (1985) Cognitive Evaluation Theory, which posits that behavior can be intrinsically motivated, extrinsically motivated, or amotivated. Researchers have examined the relationships of competitive and recreation sport structures and gender to athlete sport motivation (Fortier, Vallerand, Briere, & Provencher, 1995), motivation and elite performance (Chantal, Guay, Dobreva-Martinova, & Vallerand, 1996), and differences in motivation between skill levels (Sloan and Wiggins, 2001; Miller, 2000; MacDougall, 2000). The results support the framework of Deci and Ryan's (1985) Cognitive Evaluation Theory and the notion of defining motivation in terms of intrinsic motivation, extrinsic motivation, and amotivation. Martens (1987) and Kotter (1988) have proposed that motivation is a consequence of leadership behavior, a relationship that will be formally tested in the present study. In addition, a recent study conducted by Charbonneau, Barling, and Kelloway (2001) supported a mediating role for intrinsic motivation between the relationship of transformational leadership and sports performance.

Another potential consequence of leadership behavior may be commitment. Recently, a Sport Commitment Model (SCM) was introduced that defined sport commitment as a psychological state representing the desire to resolve or continue sport participation (Scanlan et al., 1993). Sport commitment was posited as having five determinants including sport enjoyment, involvement alternatives, personal investments, social constraints, and involvement opportunities. Research has supported the SCM in its original form (Helsen, Stakes, & Hodges, 1998; Starkes, 2000), and recent attempts to add an additional determinant to the SCM have supported the use of the original determinants of the SCM (Weiss, Kimmel, and Smith, 2001; Carpenter and Coleman, 1998). Research has also shown that leadership, as an organizational characteristic, is predictive of commitment (Glisson & Durick, 1988; Morris & Sherman, 1981). The work of Yousef (2000) supported the role of organizational commitment as a mediator in the relationship between leadership behavior and job satisfaction and job performance.

Athlete satisfaction is a positive affective state resulting from a complex evaluation of the structures, processes, and outcomes associated with the athletic experience, and it may prove to be the ultimate measure of organizational effectiveness of an athletic program (Chelladurai &

Riemer, 1997). Previous research on the MML has confirmed the positive relationship between preferred and perceived leader behavior congruency with member satisfaction (Chelladurai, 1978; 1984; Chelladurai et al., 1988; Dwyer & Fischer, 1990; Horne & Carron, 1985; McMillin, 1990; Riemer & Chelladurai, 1995; Schliesman, 1987; Summers, 1983; Weiss & Friedrichs, 1986). In 1997, Chelladurai and Riemer conceptualized satisfaction in terms of athlete satisfaction, which was classified into the following four facets: team and individual outcomes, team and individual processes, and social processes. Utilizing athlete satisfaction in the specifications set forth by Chelladurai and Riemer (1997), researchers have since examined the impact of leadership upon satisfaction in sport-specific settings with mixed results (Yusof, 2002; Riemer & Toon, 2001). However, other studies in non-sport settings have confirmed the positive relationship between leadership and satisfaction (Bass, 1985; Downey, Sheridan, & Slocum, 1975; Halpin & Winer, 1957; Hater and Bass, 1988; House, Filley, & Kerr, 1971; Hunt & Liesbscher, 1973; Koh et al., 1995; Osborn & Hunt, 1975b; Szilagyi & Keller, 1976; Teas, 1983; Teas & Horrell, 1981; Waldman et al., 1987; Yunker & Hunt, 1976).

CHAPTER 3

METHODOLOGY

The purpose of this chapter is to explicate the methodology of this study. The chapter is presented in five sections which include: (a) Research Design; (b) Instrumentation; (c) Pilot Study; (d) Participants and Procedures; and (e) Data Analysis.

Research Design

This study incorporated a survey design and the research variables were not manipulated. The purpose of the survey design is to generalize from a sample to a population so that inferences can be made about some characteristic, attitude, or behavior of the population (Babbie, 2001). Surveys have several advantages and disadvantages. The advantages include the following: 1) Surveys are particularly useful in describing the characteristics of a large population; 2) Surveys make large samples feasible; 3) Surveys are flexible, and 4) Standardized questionnaires ask exactly the same questions of all subjects and must impute the same intent to all respondents giving a particular response, thus strengthening the measurement quality (Babbie, 2001).

According to Babbie (2001), the disadvantages of survey research include the following: 1) The requirement of standardization forces standardized questionnaire items to often represent the least common denominator in assessing people's attitudes, orientations, circumstances, and experiences; 2) Surveys can be inflexible in the respect that initial survey designs typically must remain unchanged through the research study; and 3) Surveys are subject to artificiality in the respect that the topic of study may not be amenable to measurement through questionnaires or the act of studying that topic (i.e., an attitude) may actually affect it. Furthermore, it is also important to note that the survey design selected for this study was cross-sectional and reflected the attitudes of the participants at one point in time. The survey questions were also superficial in the respect that they assessed attitude levels such as motivation and commitment.

This study utilized the internet in order to administer the survey instrument to a large number of subjects over a broad geographical area. Internet surveys have several specific advantages and disadvantages when compared to their traditional "paper and pencil" counterparts. The advantages include: (1) ease of access to a large number of demographically and culturally diverse participants as well as (2) ease of access to very rare, specific participant populations; (3) a certain justification for generalization of findings in internet experiments to the general population; (4) generalizability of findings to more settings and situations, as there are reasons to believe that external validity in internet experiments is high; (5) avoidance of time constraints; (6) avoidance of organizational problems, such as scheduling difficulties, as thousands of participants may participate simultaneously; (7) completely voluntary participation; (8) ease of acquisition of just the optimal number of participants for achieving high statistical power while being able to draw meaningful conclusions from the experiment; (9) detectability of motivational confounding; (10) reduction of experimenter effects; (11) reduction of demand characteristics; (12) cost savings of lab space, person hours, equipment, administration; (13) greater openness of the research process; (14) ability to assess the number of nonparticipants; (15) ease of comparing results with results from a locally tested sample; (16) greater external validity through greater technical variance; (17) ease of access for participants (bringing the experiment to the participant instead of the opposite); and (18) public control of ethical standards (Reips, 2000).

Reips (2000) also outlined several disadvantages of internet surveys along with suggestions for possible solutions. These disadvantages and solution suggestions include the following: (1) Possible multiple submissions can be avoided or controlled by collecting personal identification items, by checking internal consistency as well as date and time consistency of answers, and by using techniques such as subsampling, participant pools, or handing out passwords; (2) Experimental control may be an issue in some experimental designs, but it is less of an issue when using a between-subjects design with random distribution of participants to experimental conditions; (3) Self-selection can be controlled by using the multiple site entry technique; (4) Dropout is high in internet experiments, especially if no financial incentives are given for participation; (5) The reduced or absent interaction with participants during an internet experiment creates problems if instructions are misunderstood; (6) The comparative basis for the

internet experiment method is low; and (7) External validity of internet experiments may be limited by their dependence on computers and networks.

Dillman (2000) also noted several limitations of web-based surveys. First, not everyone is connected to the internet, so this survey method will not work with all populations. Furthermore, even if connected to the internet, not all potential respondents are equally computer literate. Screen configurations may appear significantly different from one respondent to another depending on settings of individual computers. Finally, since e-mail addresses are not standardized, sampling of e-mail addresses is difficult (i.e., sometimes there is more than one e-mail address per respondent).

Dillman (2000) proposed the following design guidelines for web-based surveys: (1) Utilize a multiple contact strategy much like that used for regular mail surveys; (2) Personalize contacts through e-mail if possible; (3) Keep the invitation brief; (4) Begin with an interesting, but simple to answer, question; (5) Introduce a Web survey with a welcome screen that is motivational, emphasizes the ease of response, and instructs about how to proceed to the survey; (6) Present each question in a conventional format similar to that normally used on paper, self-administered surveys; (7) Do not require respondents to provide an answer to each question before being allowed to answer subsequent questions; and (8) Make it possible for each question, and corresponding potential responses to that question to be visible on the screen at one time.

In order to increase response rates for web-based surveys, Dillman (2000) recommends the inclusion of a pre-notification e-mail message that should be sent two to three days prior to the survey administration date. Pre-notification messages in particular have been shown to increase response rates among a sample of intercollegiate head coaches (Kent & Turner, 2002). In addition, follow-up reminders should be sent first via e-mail and then through progressively more expensive methods such as paper mail (Schaeffer & Dillman, 1998). Such multiple contacts have been shown to progressively increase response rates for e-mail surveys (Mehta & Sicadas, 1995; Smith, 1997).

Since this survey was implemented online, frame error, or the extent to which the desired participants are actually sampled, needed to be controlled. To ensure that only collegiate tennis players were presented with the opportunity to complete the survey, letters were sent to each tennis coach requesting that he or she distribute the information only to team members. Therefore, the responsibility to limit the awareness of the survey to the desired participants lay

with the coach of each team. Furthermore, the online survey was password protected to prevent the possibility of survey submissions from non-desired respondents. This password was encoded within the website link sent to each player in an effort to limit any potential responses from non-players. Finally, the survey was administered through a secure website, which significantly restricted the potential for data tampering.

Instrumentation

Demographic Questionnaire

A demographic questionnaire was administered that incorporated the following items: age, gender, nationality, years of overall playing experience, years of collegiate playing experience, name of current institution, singles playing position on team, NCAA playing division, level of academic scholarship funding, and level of athletic scholarship funding.

Revised Leadership Scale for Sports

Zhang, Jensen, and Mann's (1997) Revised Leadership Scale for Sports (RLSS) was utilized to assess preferred and perceived leadership behavior. The RLSS is a 60-item questionnaire that contains the following subscales: Training and Instruction, Democratic Behavior, Autocratic Behavior, Social Support, Positive Feedback, and Situation Consideration (Table 4). Training and Instruction reflects the coach's ability to improve the performance level of the athlete. The extent to which the coach permits participation by the athletes in decision-making is termed Democratic Behavior. Autocratic Behavior indicates the extent to which a coach keeps apart from the athletes and stresses his or her authority in dealing with them. The Social Support factor refers to the extent to which the coach is involved in satisfying the interpersonal needs of the athletes. The Positive Feedback factor represents the coach's expressions of appreciation and willingness to compliment the athletes for their performance and contribution. The Situational Consideration behaviors includes proper coaching behaviors aimed at considering the situational factors (i.e. time, individual, environment, team, and game), setting up individual goals and clarifying ways to reach the goals, differentiating coaching methods at different stages, and assigning an athlete to the right game position. Respondents usually complete the RLSS by using a five point Likert scale, which signifies "always", "often", "occasionally", "seldom", and "never", but a seven point Likert scale was utilized in the present study to allow for the use of a standard seven point response for all survey instruments.

Table 4. Revised Leadership Scale for Sports

Preferred: "I prefer my coach to…"	*Perceived: "My coach…"*
Democratic Behavior	
Put the suggestions made by the team members into operation	
Ask for the opinion of the athletes on strategies for specific competition	
Encourage the athletes to make suggestions for ways to conduct practices	
Let the athletes try their own way even if they make mistakes	
See the merits of athletes' ideas when different from the coach's	
Let the athletes set their own goals	
Get approval from the athletes on important matters before going ahead	
Let the athletes decide on plays to be used in a competition	
Give the athletes freedom to determine the details of conducting a drill	
Get input from the athletes at daily team meetings	
Ask for the opinion of athletes on important coaching matters	
Let the athletes share in decision-making and policy formation	
Positive Feedback	
Show "OK" or "Thumbs Up" gesture to the athletes	
Pat an athlete after a good performance	
Congratulate an athlete after a good play	
Tell an athlete when the athlete does a particularly good job	
Express appreciation when an athlete performs well	
Encourage an athlete when the athlete makes mistakes in performance	
Praise the athletes' good performance after losing a competition	
Compliment an athlete for good performance in front of others	
Recognize individual contributions to the success of each competition	
Clap hands when an athlete does well	
Give credit when it is due	
Reward an athlete as long as the athlete tries hard	
Training and Instruction	
Make complex things easier to understand and learn	
Pay special attention to correcting athletes' mistakes	
Explain to each athlete the techniques and tactics of the sport	
Use a variety of drills for a practice	
Stress the mastery of greater skills	
Use objective measurements for evaluation	
Conduct proper progressions in teaching fundamentals	
Supervise athletes' drills closely	
Clarify training priorities and work on them	
Possess good knowledge of the sport	
Situation Consideration	
Coach to the level of the athletes	
Set goals that are compatible with the athletes' ability	
Clarify goals and the paths to reach goals for the athletes	

Table 4-Continued

Adapt coaching style to suit the situation
Use alternative methods when the efforts of the athletes are not working well in practice or in competition
Alter plans due to unforeseen events
Put the appropriate athletes in the lineup
Put an athlete into different positions depending on the needs of the situation
Assign tasks according to each individual's ability and needs
Increase complexity and demands if the athletes find the demands are too easy
Social Support
Encourage close and informal relationships with the athletes
Remain sensitive to the needs of the athletes
Stay interested in the personal well being of the athletes
Look out for the personal welfare of the athletes
Encourage the athletes to confide in the coach
Perform personal favors for the athletes
Help the athletes with their personal problems
Visit with the parents/guardians of the athletes
Autocratic Behavior
Disregard athletes' fears and dissatisfactions
Refuse to compromise on a point
Plan for the team relatively independent of the athletes
Prescribe the methods to be followed
Dislike suggestions and opinions from the athletes
Fail to explain his/her actions
Present ideas forcefully
Keep aloof from the athletes

It is important to note that the participants in this study will be asked to evaluate only the leadership styles of their respective head coach and not the assistant coach(es). Research conducted by Mondello and Janelle (2001) suggested that head and assistant coaches vary in leadership behavior despite the presence of similar organizational goals. The authors found that head coaches exhibited significantly more social support than assistant coaches. Since differences may exist between the leadership behaviors of head and assistant coaches, this study will only ask participants to assess the leadership behavior of their respective head coaches.

Sport Motivation Scale

The Sport Motivation Scale (SMS) was utilized to assess various components of intrinsic motivation and extrinsic motivation, and amotivation toward sport (Pelletier, Fortier, Vallerand, Tuson, Briere, & Blais, 1995). The SMS is a 28-item questionnaire containing seven subscales

that assess three types of intrinsic motivation (Intrinsic Motivation to Know, Intrinsic Motivation Toward Accomplishments, and Intrinsic Motivation to Experience Stimulation), three forms of regulation for extrinsic motivation (Introjection, Identification, and External Regulation), and an Amotivation subscale (Table 5). Respondents complete the SMS by using a seven point Likert scale.

Table 5. Sport Motivation Scale

Why do you practice your sport?
Intrinsic Motivation to Know
For the pleasure it gives me to know more about the sport that I practice.
For the pleasure of discovering new training techniques.
For the pleasure that I feel while learning training techniques that I have never tried before.
For the pleasure of discovering new performance strategies.
Intrinsic Motivation toward Accomplishment
Because I feel a lot of personal satisfaction while mastering certain difficult training techniques.
For the pleasure I feel while improving some of my weak points.
For the satisfaction I experience while I am perfecting my abilities.
For the pleasure that I feel while executing certain difficult movements.
Intrinsic Motivation to Experience Stimulation
For the pleasure I feel in living exciting experiences.
For the excitement I feel when I am really involved in the activity.
For the intense emotions that I feel while I am doing a sport that I like.
Because I like the feeling of being totally immersed in the activity.
Extrinsic Motivation Identified
Because, in my opinion, it is one of the best ways to meet people.
Because it is one of the best ways I have chosen to develop other aspects of myself.
Because it is a good way to learn lots of things which could be useful to me in other areas of my life.
Because it is one of the best ways to maintain good relationships with my friends.
Extrinsic Motivation Introjected
Because it is absolutely necessary to do sports if one wants to be in shape.
Because I must do sports to feel good about myself.
Because I would feel bad if I was not taking time to do it.
Because I must do sports regularly.
Extrinsic Motivation External Regulation
Because it allows me to be well regarded by people that I know.

Table 5-Continued

For the prestige of being an athlete.
Because people around me think it is important to be in shape.
To show others how good I am good at my sport.
Amotivation
I used to have good reasons for doing sports, but now I am asking myself if I should continue doing it.
I don't know anymore; I have the impression that I am incapable of succeeding in this sport.
It is not clear to me anymore; I don't really think my place is in sport.
I often ask myself; I can't seem to achieve the goals that I set for myself.

Sport Commitment Model Scale

The Sport Commitment Model Scale (SCMS) was utilized to assess the determinants of sport commitment, "a psychological construct representing the desire and resolve to continue sport participation (Scanlan, Simons, Carpenter, Schmidt, & Keeler, 1993, p. 18)." The 14-item SCMS measures sport commitment, sport enjoyment, social constraints to continue participating in the sport activity, and involvement opportunities afforded by continued participation (Table 6). Respondents normally complete the SCMS by using a five point Likert scale, with 1 signifying "not at all/none or nothing" and 5 representing "very much or a lot", but a seven point Likert scale was utilized in the present study to allow for the use of a standard seven point response for all survey instruments.

Table 6. Sport Commitment Model Scale

Commitment
How dedicated are you to playing collegiate tennis?
How determined are you to keep playing collegiate tennis?
How hard would it be for you to quit collegiate tennis?
What would you be willing to do to keep playing collegiate tennis?
Enjoyment
Do you enjoy playing collegiate tennis this season?
Do you have fun playing collegiate tennis this season?
Do you like playing collegiate tennis this season?
Are you happy playing collegiate tennis this season?
Social Constraints
I feel I have to play collegiate tennis to please my mom.
I feel I have to play collegiate tennis to please my dad.

Table 6-Continued
I feel I have to stay in this program so that people won't think I'm a quitter.

Involvement Opportunities
Would you miss your head coach if you left collegiate tennis?
Would you miss the good times you have had playing tennis this season if you left collegiate tennis?
Would you miss your friends in collegiate tennis if you left the program?

Athlete Satisfaction Questionnaire

The Athlete Satisfaction Questionnaire (Riemer & Chelladurai, 1998) was developed to measure the facets of satisfaction identified previously by Chelladurai and Riemer (1997). The Athlete Satisfaction Questionnaire (ASQ) is a 56-item questionnaire that contains 15 dimensions of athlete satisfaction. These subscales include individual performance, team performance, ability utilization, strategy, personal treatment, training and instruction, team task contribution, team social contribution, ethics, team integration, personal dedication, budget, medical personnel, academic support services, and external agents (Table 7). Respondents complete the ASQ by using a seven point Likert scale.

Table 7. Athlete Satisfaction Questionnaire

I am satisfied with....
Individual Performance
the degree to which I have reached my performance goals during the season.
the improvement in my performance over the previous season.
the improvement in my skill level.
Team Performance
the team's win/loss record this season.
the team's overall performance this season.
the extent to which the team is meeting its goals for the season.
Ability Utilization
the degree to which my abilities are used.
the level to which my talents are employed.
the extent to which my role matches my potential.
the amount of time I play during competitions.
the degree to which my role on the team matches my preferred role.
Strategy
the coach's choice of plays during competitions.
the tactics used during games.

Table 7-Continued

coach's choice of strategies during games.
how the coach makes adjustments during competitions.
coach's game plans.
the manner in which coach combines the available talent.

Personal Treatment

the recognition I receive from my coach.
the friendliness of the coach towards me.
the level of appreciation my coach shows when I do well.
my coach's loyalty towards me.
the extent to which the coach is behind me.

Training and Instruction

the training I receive from the coach during the season.
the instruction I have received from the coach this season.
the coach's teaching of the tactics and techniques of my position.

Team Task Contribution

the extent to which teammates provide me with instruction.
the guidance I receive from my teammates.
the constructive feedback I receive from my teammates.

Team Social Contribution

my social status on the team.
the role I play in the social life of the team.
the degree to which my teammates accept me on a social level.

Ethics

the extent to which all team members are ethical.
my teammates' sense of fair play.
my teammates' 'sportsmanlike' behavior.

Team Integration

how the team works to be the best.
the degree to which teammates share the same goal.
team member's dedication to work together toward team goals.
the extent to which teammates play as a team.

Personal Dedication

the degree to which I do my best for the team.
my dedication during practices.
my enthusiasm during competitions.
my commitment to the team.

Table 7-Continued

Budget
the funding provided to my team.
the amount of money spent on my team.
the fairness of the team's budget.
Medical Personnel
the competence of the medical personnel.
the fairness with which the medical personnel treats all players
the medical personnel's interest in the athletes.
the promptness of medical attention.
Academic Support Services
the tutoring I receive.
the academic support services provided.
the personnel of the academic support services (i.e., tutors, counselors).
External Agents
the media's support of our program.
the support from the university community.
the supportiveness of the fans.
the local community's support.

Pilot Study

A pilot study was conducted to confirm the viability of the proposed methodological procedure. Eight male and eleven female collegiate tennis players at a Division I university in the southeastern United States were asked to complete demographic questions, the preferred and perceived version of the RLSS, SMS, SCMS, and the ASQ (231 total items). Electronic mailings were sent to the coaches detailing the risks associated with the study and requesting their cooperation. After obtaining the permission of the coaches, electronic mails were sent to the private university e-mail accounts of the athletes detailing the risks associated with the study and requesting their participation. The university selected for this pilot study remits private university-based e-mail accounts to all students and asks students to check these accounts on a regular basis. The university then periodically disseminates important information to these students vie these university-based e-mail accounts. Should the student not choose to access this information directly through this account, he or she is given the option of having any e-mails sent to the university-based account automatically forwarded to their primary e-mail account. The use of these university-based e-mail accounts significantly reduced the potential for frame

error. The surveys were available in a secure online format at http://www.formsite.com. The surveys were administered over a period of three weeks with a reminder sent after each week through e-mail.

Out of the 19 athletes surveyed, a total of four female athletes and one male athlete completed the surveys. Therefore, the overall athlete participation rate was 26.3%. The data were successfully retrieved from the secure survey administration website and placed in a Microsoft Excel spreadsheet. The data were coded and then transferred to SPSS format.

The results of the pilot study confirmed the appropriateness of the proposed methodology. However, the low participation rate was a primary matter of concern. The pilot study design asked collegiate tennis players to complete a total of 231 items, although the 120 items from the RLSS are structured in a manner that only requires the reading of 60 items and then answering in the preferred and perceived contexts. The estimated time for completion of these items was 20-25 minutes. Methods to minimize the number of items and time necessary to complete the overall instrument were explored in order to increase participation rate.

A total of four demographic items were deleted from the survey instrument. These items asked the participant about individual and team national rankings. The intent of these questions was to establish a quantifiable measure of ability. However, the results from the pilot study showed that team members did not provide consistent information about their team ranking. In an earlier demographic question, respondents are asked to provide the name of their respective college or university. With this information in hand, the researcher will be able to determine the existence of any team ranking through information released by the National Collegiate Athletic Association.

A total of forty-six items from the Athlete Satisfaction Questionnaire were deleted from the survey instrument. Only four of the fifteen subscales were retained: training and instruction satisfaction (three items), personal treatment satisfaction (five items), team performance satisfaction (three items), and individual performance satisfaction (three items). The first two subscales focus on satisfaction with the processes of coaching behavior, while the latter two subscales evaluate satisfaction with outcomes associated with the process of leadership (Riemer & Chelladurai, 1998). Other studies utilizing the ASQ to measure athlete satisfaction as an outcome of leadership behavior have reduced the number of questionnaire items for the ASQ in this same manner (Riemer & Toon, 2001; Al-Tahayneh, 2003).

With the above items deleted from the survey instrument, the final number of items presented to the participants was reduced to 181 questions. Of these 181 items, the 120 items from the RLSS were structured in a manner that only requires the reading of 60 items and then answering in the preferred and perceived contexts. Therefore, the participant was asked to complete 121 questions although 181 responses will be required for full completion of the survey. A list of all questionnaire items administered to the athletes during the pilot study in Hyper Text Markup Language (HTML) format can be found in Appendix A.

Participants and Procedures

A total of 1107 collegiate tennis coaches at the NCAA Division I, II, and III playing levels were informed of the study via a pre-notification e-mail during the last two weeks of the regular season. This time period was deemed long enough for new and existing players to establish a coach-player relationship, but early enough to avoid excessive time conflicts with the post-season championships and final exams. E-mail addresses for each coach were obtained from the College Tennis Connect website (http://www.collegetennisconnect.com). However, a total of 96 e-mail messages sent to coaches were returned to sender due to complications such as incorrect e-mail addresses, terminated e-mail accounts, exceeded storage quota limits, and temporary absence of head coach due to administrative or maternity leave. A total of 14 of the returned messages were able to be corrected to reflect the present e-mail address of the coaches, so only 82 messages were undeliverable.

One week after the remittance of the pre-notification message, an electronic mail message was sent to each coach asking him or her to encourage and facilitate athlete participation. The letter included a summary of the risks and benefits of participation along with directions to complete the survey at a secure website. The coaches were asked to forward the electronic message to each of their respective athletes and carbon copy ("CC") the message to the primary investigator's e-mail address. Receipt of the carbon copied message allowed the primary investigator to determine the number of athletes who received invitations to participate in the survey. Follow-up reminders were sent to the coaches each week for a total of four weeks.

The surveys were conducted in an online format in an attempt to maximize player convenience, secure response confidentiality, and minimize necessary paper. The survey was administered through a third-party company entitled FormSite (http://www.formsite.com). This service allowed for the administration of online surveys through existing or created templates.

Furthermore, the data was collected and stored in a database spreadsheet format, allowing for an expedient transfer of data into a statistical analysis program.

A total of 514 collegiate tennis players received invitations from their respective coaches to participate in the survey. Student athlete respondents were undergraduate freshmen, sophomores, juniors, and seniors with various skill levels and backgrounds. A total of 245 athletes responded to the request to participate, which resulted in an overall response rate of 47.7%. More definitive information about the source and nature of the subjects was ascertained via a demographic questionnaire.

Data Analysis

Descriptive statistics were calculated for each of the demographic variables. Alpha (Cronbach) coefficients were calculated for the components of each measurement scale to verify internal consistency. Nunnally and Bernstein's (1994) recommended alpha value of .70 was utilized to evaluate the internal consistency of each subscale. Confirmatory factor analyses were performed on each scale to assess an appropriate fit of the data to the identified model factors.

Multivariate multiple regression analyses were utilized to determine the effect of demographic variables on leadership behavior preferences. This statistical procedure addressed the following hypotheses:

H1a: The ability level of the collegiate tennis players as defined by NCAA division level will be a determinant of preferred leadership behavior.

H1b: The ability level of the collegiate tennis players as defined by singles starting status will be a determinant of preferred leadership behavior.

H2: The gender of the collegiate tennis players will be a determinant of preferred leadership behavior.

The multiple regression procedure will incorporate the following analysis steps as suggested by Tate (1998). First, the extent and pattern of any missing data was assessed. Second, a case analysis was performed to identify any outliers and any observations with excessive influence on study results using the delta betas and sensitivity studies. Third, any violations of assumptions were assessed using the residuals plot and logical analysis of the study circumstances. Fourth, the overall relationship was assessed by estimating and testing the model R^2 and determining the adjusted R^2. Fifth, the unique effect of each interval and dichotomous independent variables were described through the use of the estimated regression coefficient to

describe the effect. This procedure also included a significance test, an interval estimate, and an assessment of the practical importance of the effect. The unique contribution to R^2 ($?R^2$) was used to describe the effect.

In order to avoid the potential problems associated with the use of difference scores (Peter, Churchill, & Brown, 1993), a regression technique was applied to evaluate the leadership congruence hypothesis. This particular technique has been suggested in prior research (Berger-Gross, 1982; Berger-Gross & Kraut, 1984; Cronbach, 1958; Johns, 1981; Rice, McFarlin, & Bennett, 1989; Riemer & Chelladurai, 1995). The base scores (i.e. preferences and perceptions) were entered first followed by their interactional term (preferred x perceived). Two sets of multiple regression equations were calculated. In the first set, preference scores were entered first followed by the perceptions and the interaction term, and the second set followed a similar format but reversed the order of the preference and perception terms. This approach has been advocated by others (Courneya & Chelladurai, 1991; Riemer & Chelladuarai, 1995; Riemer & Toon, 2001) to provide information regarding the unique variance accounted for by each leadership variable as well as its relative dominance. The congruence hypothesis was accepted if the interaction significantly increased the amount of variance explained. If the term is significant, the interaction was then interpreted by plotting the resulting regression equations.

Multiple Analysis of Variance (MANOVA) will be used to assess the effect of leadership behavior congruence on the motivation, commitment, and satisfaction of the athletes. This statistical procedure addressed the following hypotheses:

H3: Intrinsic motivation will be dependent on the congruence between preferred and perceived leadership behaviors.

H4: Extrinsic motivation will not be dependent on the congruence between preferred and perceived leadership behaviors.

H5: Amotivation will not be dependent on the congruence between preferred and perceived leadership behaviors.

H6: Sport commitment and its determinants will be dependent on the congruence between preferred and perceived leadership behaviors.

H7: Athlete satisfaction will be dependent on the congruence between preferred and perceived leadership behaviors.

CHAPTER 4

RESULTS

The purpose of this chapter is to report the results of this study. The chapter is presented in six sections which include: (a) Demographic Variables; (b) Scale Reliabilities; (c) Demographic Differences for Preferred Leadership Behavior; (d) Leadership Congruency and Motivation; (e) Leadership Congruency and Commitment; and (f) Leadership Congruency and Satisfaction.

Demographic Variables

The results of the descriptive statistics calculated for the demographic variables are as follows. The sample featured a total of 78 (31.8%) males and 167 (68.2%) females. Age of the subjects ranged from 18 to 24 years with a mean age of 20.01 (standard deviation = 1.376 years). The majority (78.8%) of the sample cited the United States as their nationality, with the remainder of the sample (22.2%) citing one of 31 different foreign countries. The majority of the respondents competed in NCAA Divisions I (42.0%) and III (48.6%), with only 9.4% of the athletes emanating from Division II programs. A total of 76 different colleges were represented in the sample by at least one student athlete.

Years of playing experience in the sport of tennis ranged from one to 18 years with a mean of 11.05 (standard deviation = 3.525). Years of collegiate playing experience ranged from one to five years with a mean of 2.05 (standard deviation = 1.096). The singles playing position for each team member ranged from one to 20 with a mean of 4.47 (standard deviation = 2.843). Since only singles position numbers one through six compete in intercollegiate singles play, the respondents were further categorized into starters (75.9%) and non-starters (24.1%).

Only 15.9% of respondents received full athletic scholarships, while 20.8% received partial athletic scholarships and 63.3% received no athletic scholarship funding. It is important to note that many (48.6%) of respondents competed in NCAA Division III programs, which do not offer athletic scholarships due to NCAA guidelines. Of those eligible to receive athletic scholarships (i.e., Divisions I and II), a total of 71.4% of athletes received at least some form of

athletic scholarship funding. Only 4.5% of respondents received full academic scholarships, while 36.7% received partial academic scholarships and 58.8% received no academic scholarship funding.

Scale Reliabilities and Fit

Alpha (Cronbach) coefficients were calculated for the components of each measurement scale to verify internal consistency. The internal consistency estimates for every component of each subscale are featured in Table 8. The Cronbach alpha levels of all subscales exceeded the value of .70 suggested as adequate by Nunnally and Bernstein (1994) with the exception of the involvement opportunities subscale (a = .69) from the Sport Commitment Model Scale and the extrinsic motivation introjected subscale (a = .67) from the Sport Motivation Scale. As a result of their substandard reliability scores, both subscales were deleted from further analysis.

Scale fit was assessed via a confirmatory factor analysis performed on each scale using LISREL 8.70 software (SSSI Scientific Software, Lincolnwood, IL). The calculated fit indices for all scales can be found in Table 9. The Root Mean Square Error of Approximation for all scales was at or below 0.1, the maximum value threshold suggested by Steiger (1990) and Kelloway (1998) to indicate reasonable fit of the data to the model. Comparative fit was assessed via the Normed Fit Index (NFI), Non-Normed Fit Index (NNFI), and Comparative Fit Index (CFI). The fit indices for all scales met or exceeded the minimum threshold value of 0.90 suggested by Kelloway (1998) with the exception of the Normed Fit Index of the perceptions version of the Revised Leadership Scale for Sports (0.87). However, the perceptions version of the RLSS was retained for further analysis on the basis of its favorable performances on other comparative (NNFI and CFI) and absolute (RMSEA) fit indices as well as its acceptable overall reliability scores. Full printouts of the LISREL confirmatory factor analyses outputs are located in Appendix B.

Table 8. Internal consistency estimates of subscales

Scale		a-level
Sport Commitment Model Scale		
	Commitment	.85
	Enjoyment	.97
	Social Constraints	.71
	Involvement Opportunities	.69
Sport Motivation Scale		
	Intrinsic Motivation to Know	.87
	Intrinsic Motivation toward Accomplishment	.85
	Intrinsic Motivation to Experience Stimulation	.80
	Extrinsic Motivation Identified	.72
	Extrinsic Motivation Introjected	.67
	Extrinsic Motivation External Regulation	.78
	Amotivation	.83
Revised Leadership Scale for Sports (preferences)		
	Democratic Behavior	.88
	Positive Feedback	.93
	Training and Instruction	.93
	Situation Consideration	.91
	Social Support	.90
	Autocratic Behavior	.71
Revised Leadership Scale for Sports (perceptions)		
	Democratic Behavior	.86
	Positive Feedback	.85
	Training and Instruction	.86
	Situation Consideration	.84
	Social Support	.77
	Autocratic Behavior	.82
Athlete Satisfaction Questionnaire		
	Individual Performance	.88
	Personal Treatment	.95
	Team Performance	.91
	Training and Instruction	.95

Table 9. Fit indices of scales

Fit Index	RLSS pref	RLSS perc	SCMS	SMS	ASQ
RMSEA	0.072	0.068	0.1	0.08	0.095
NFI	0.94	0.87	0.96	0.9	0.97
NNFI	0.97	0.93	0.96	0.93	0.97
CFI	0.97	0.93	0.97	0.94	0.98

RLSS pref = Preferences version of Revised Leadership Scale for Sports;
RLSS perc = Perception version of Revised Leadership Scale for Sports;
SCMS = Sport Commitment Model Scale;
SMS = Sport Motivation Scale;
ASQ = Athlete Satisfaction Questionnaire;
RMSEA = Root Mean Square Error of Approximation;
NFI = Normed Fit Index;
NNFI = Non-Normed Fit Index;
CGI = Comparitive Fit Index

Demographic Differences for Preferred Leadership Behavior

Overall means and standard deviations for each factor can be found in Table 10. Multivariate multiple regression analyses were utilized to determine any differences among demographic variables regarding leadership behavior preferences. Table 11 illustrates the multivariate test results for the demographic variables of gender, age, NCAA playing division, years of overall playing experience, years of collegiate playing experience, singles starting versus non-starting status, NCAA playing division, level of academic scholarship funding, and level of athletic scholarship funding. The results indicated no significant differences among the demographic variables.

Table 10. Overall factor means and standard deviations

Scale and Factor	Mean	Std. Deviation
SCMS commitment	5.84	1.17
SCMS enjoyment	6.00	1.21
SCMS social constraints	1.83	1.07
SCMS involvement opportunities	5.80	1.19
SMS intrinsic motivation to know	4.75	1.36
SMS intrinsic motivation toward accomplishments	5.44	1.19
SMS intrinsic motivation to experience stimulation	5.52	1.12
SMS extrinsic motivation identified	4.54	1.26
SMS extrinsic motivation introjected	3.91	1.30
SMS extrinsic motivation external regulation	3.64	1.39
SMS amotivation	1.89	1.17
RLSS preferred Democratic Behavior	4.40	1.07
RLSS perceived Democratic Behavior	5.13	0.86
RLSS preferred Positive Feedback	5.17	1.23
RLSS perceived Positive Feedback	5.94	0.78
RLSS preferred Training and Instruction	4.84	1.30
RLSS perceived Training and Instruction	5.84	0.81
RLSS preferred Situation Consideration	5.21	1.23
RLSS perceived Situation Consideration	6.16	0.73
RLSS preferred Social Support	4.98	1.32
RLSS perceived Social Support	5.40	0.87
RLSS preferred Autocratic Behavior	3.51	0.99
RLSS perceived Autocratic Behavior	2.89	1.04
ASQ Individual Performance Satisfaction	4.80	1.52
ASQ Personal Treatment Satisfaction	5.40	1.51
ASQ Team Performance Satisfaction	4.79	1.53
ASQ Training and Instruction Satisfaction	4.70	1.73

SCMS = Sport Commitment Model Scale; SMS = Sport Motivation Scale; RLSS = Revised Leadership Scale for Sports; ASQ = Athlete Satisfaction Questionnaire

Table 11. Demographic differences for preferred leadership behavior

Effect	F	df	Sig.
Gender	1.335	6	.242
Age	1.247	6	.151
Division	1.717	12	.060
Playing experience	1.006	108	.467
Collegiate experience	0.709	48	.933
Starter vs. Non-starter	0.351	6	.909
Athletic scholarship	1.383	12	.170
Academic scholarship	1.242	12	.251

Leadership Congruency and Motivation

The regression results detailing leadership congruency for the dependent variable of intrinsic motivation to know are found in Table 12. The congruency of preferred and perceived autocratic leader behaviors resulted in a significant ($p = .038$) increase in R^2 (.017) for the dependent variable of intrinsic motivation to know. Support for the congruency hypothesis was not found for democratic behavior, positive feedback, training and instruction, situation consideration, and social support for the dependent variable of intrinsic motivation to know.

Table 12. Variance attributable to preferred and perceived leadership in intrinsic motivation to know by order of entry

	Initial Order			*Reverse Order*		
	Variable	R^2	$?R^2$	Variable	R^2	$?R^2$
DB	Preference	.055***	.055***	Perception	.011	.011
	Perception	.058**	.003	Preference	.058***	.047**
	Interaction	.059**	.000	Interaction	.059**	.000
PF	Preference	.044**	.044**	Perception	.065***	.065***
	Perception	.089***	.045**	Preference	.089***	.024*
	Interaction	.089***	.000	Interaction	.089***	.000
TI	Preference	.079***	.079***	Perception	.081***	.081***
	Perception	.129***	.050***	Preference	.129***	.047***
	Interaction	.131***	.002	Interaction	.131***	.002
SC	Preference	.073***	.073***	Perception	.021*	.021*
	Perception	.081***	.008	Preference	.081***	.060***
	Interaction	.081***	.000	Interaction	.081***	.000
SS	Preference	.086***	.086***	Perception	.044**	.044**
	Perception	.093***	.007	Preference	.093***	.049***
	Interaction	.096***	.003	Interaction	.096***	.003
AB	Preference	.016*	.016*	Perception	.000	.000
	Perception	.025*	.009	Preference	.025*	.025*
	Interaction	.042*	.017*	Interaction	.042*	.017*

*p < .05; **p < .01; ***p < .001; DB = democratic behavior; PF = positive feedback; TI = training and instruction; SC = situation consideration; SS = social support; AB = autocratic behavior

The regression results detailing leadership congruency for the dependent variable of intrinsic motivation toward accomplishment are found in Table 13. No support for the congruency hypothesis was found for democratic behavior, positive feedback, training and

instruction, situation consideration, social support or autocratic behavior for the dependent variable of intrinsic motivation toward accomplishment.

Table 13. Variance attributable to preferred and perceived leadership in intrinsic motivation toward accomplishment by order of entry

	Initial Order			*Reverse Order*		
	Variable	R^2	ΔR^2	Variable	R^2	ΔR^2
DB	Preference	.032**	.032**	Perception	.007	.007
	Perception	.034*	.002	Preference	.034*	.027**
	Interaction	.034*	.000	Interaction	.034*	.000
PF	Preference	.042**	.042**	Perception	.066***	.066***
	Perception	.088***	.046**	Preference	.088***	.022*
	Interaction	.092***	.004	Interaction	.092***	.004
TI	Preference	.064	.064***	Perception	.067***	.067***
	Perception	.105	.041**	Preference	.105***	.038**
	Interaction	.116	.011	Interaction	.116***	.011
SC	Preference	.071***	.071***	Perception	.054***	.054***
	Perception	.103***	.032**	Preference	.103***	.049***
	Interaction	.105***	.002	Interaction	.105***	.002
SS	Preference	.091***	.091***	Perception	.058***	.058***
	Perception	.105***	.013	Preference	.105***	.046***
	Interaction	.105***	.000	Interaction	.105***	.000
AB	Preference	.008	.008	Perception	.001	.001
	Perception	.009	.001	Preference	.009	.008
	Interaction	.019	.011	Interaction	.019	.011

*p < .05; **p < .01; ***p < .001; DB = democratic behavior; PF = positive feedback; TI = training and instruction; SC = situation consideration; SS = social support; AB = autocratic behavior

The regression results detailing leadership congruency for the dependent variable of intrinsic motivation to experience stimulation are found in Table 14. The congruency of preferred and perceived positive feedback leader behaviors resulted in a significant (p = .013) increase in R^2 (.023) for the dependent variable of intrinsic motivation to experience stimulation. Support for the congruency hypothesis was not found for democratic behavior, training and instruction, situation consideration, social support, and autocratic behavior for the dependent variable of intrinsic motivation to experience stimulation.

Table 14. Variance attributable to preferred and perceived leadership in intrinsic motivation to experience stimulation by order of entry

	Initial Order			*Reverse Order*		
	Variable	R^2	$?R^2$	Variable	R^2	$?R^2$
DB	Preference	.037**	.037**	Perception	.004	.004
	Perception	.037*	.000	Preference	.037*	.033**
	Interaction	.039*	.001	Interaction	.039*	.001
PF	Preference	.057***	.057***	Perception	.049**	.049**
	Perception	.086***	.029**	Preference	.086***	.037**
	Interaction	.109***	.023*	Interaction	.109***	.023*
TI	Preference	.054***	.054***	Perception	.019*	.019*
	Perception	.062***	.007	Preference	.062***	.043**
	Interaction	.066**	.004	Interaction	.066**	.004
SC	Preference	.070***	.070***	Perception	.025*	.025*
	Perception	.081***	.011	Preference	.081***	.056***
	Interaction	.087***	.005	Interaction	.087***	.005
SS	Preference	.079***	.079***	Perception	.038**	.038**
	Perception	.084***	.006	Preference	.084***	.046**
	Interaction	.088***	.004	Interaction	.088***	.004
AB	Preference	.010	.010	Perception	.000	.000
	Perception	.014	.004	Preference	.014	.014
	Interaction	.025	.011	Interaction	.025	.011

*p < .05; **p < .01; ***p < .001; DB = democratic behavior; PF = positive feedback; TI = training and instruction; SC = situation consideration; SS = social support; AB = autocratic behavior

The regression results detailing leadership congruency for the dependent variable of extrinsic motivation identified are found in Table 15. The congruency of preferred and perceived autocratic leader behaviors resulted in a significant (p = .011) increase in R^2 (.026) for the dependent variable of extrinsic motivation identified. Support for the congruency hypothesis was not found for democratic behavior, positive feedback, training and instruction, situation consideration, and social support for the dependent variable of extrinsic motivation identified.

Table 15. Variance attributable to preferred and perceived leadership in extrinsic motivation identified by order of entry

	Initial Order			*Reverse Order*		
	Variable	R^2	? R^2	Variable	R^2	? R^2
DB	Preference	.039**	.039**	Perception	.005	.005
	Perception	.039**	.001	Preference	.039**	.035**
	Interaction	.040*	.001	Interaction	.040*	.001
PF	Preference	.019*	.019*	Perception	.016	.016
	Perception	.028*	.009	Preference	.028*	.013
	Interaction	.033*	.005	Interaction	.033*	.005
TI	Preference	.011	.011	Perception	.000	.000
	Perception	.012	.001	Preference	.012	.012
	Interaction	.019	.007	Interaction	.019	.007
SC	Preference	.024*	.024*	Perception	.000	.000
	Perception	.024	.000	Preference	.024	.024*
	Interaction	.026	.002	Interaction	.026	.002
SS	Preference	.035**	.035**	Perception	.063***	.063***
	Perception	.069***	.034**	Preference	.069***	.006
	Interaction	.070**	.001	Interaction	.070**	.001
AB	Preference	.000	.000	Perception	.015	.015
	Perception	.022	.022*	Preference	.022	.007
	Interaction	.048**	.026*	Interaction	.048**	.026*

*p < .05; **p < .01; ***p < .001; DB = democratic behavior; PF = positive feedback; TI = training and instruction; SC = situation consideration; SS = social support; AB = autocratic behavior

The regression results detailing leadership congruency for the dependent variable of extrinsic motivation external regulation are found in Table 16. No support for the congruency hypothesis was found for democratic behavior, positive feedback, training and instruction, situation consideration, social support or autocratic behavior for the dependent variable of extrinsic motivation external regulation.

Table 16. Variance attributable to preferred and perceived leadership in extrinsic motivation external regulation by order of entry

	Initial Order			*Reverse Order*		
	Variable	R^2	$?R^2$	Variable	R^2	$?R^2$
DB	Preference	.000	.000	Perception	.000	.000
	Perception	.000	.000	Preference	.000	.000
	Interaction	.011	.011	Interaction	.011	.011
PF	Preference	.004	.004	Perception	.022*	.022*
	Perception	.023	.019*	Preference	.023	.001
	Interaction	.024	.001	Interaction	.024	.001
TI	Preference	.003	.003	Perception	.000	.000
	Perception	.003	.000	Preference	.003	.003
	Interaction	.006	.003	Interaction	.006	.003
SC	Preference	.002	.002	Perception	.002	.002
	Perception	.005	.003	Preference	.005	.003
	Interaction	.005	.000	Interaction	.005	.000
SS	Preference	.005	.005	Perception	.023*	.023*
	Perception	.023	.018*	Preference	.023	.000
	Interaction	.026	.003	Interaction	.026	.003
AB	Preference	.047**	.047**	Perception	.045**	.045**
	Perception	.062***	.014	Preference	.062***	.017*
	Interaction	.074***	.012	Interaction	.074***	.012

*p < .05; **p < .01; ***p < .001; DB = democratic behavior; PF = positive feedback; TI = training and instruction; SC = situation consideration; SS = social support; AB = autocratic behavior

The regression results detailing leadership congruency for the dependent variable of amotivation are found in Table 17. The congruency of preferred and perceived situation consideration leader behaviors resulted in a significant (p = .023) increase in R^2 (.019) for the dependent variable of amotivation. In addition, the congruency of preferred and perceived social support leader behaviors resulted in a significant (p = .015) increase in R^2 (.023) for the dependent variable of amotivation. Support for the congruency hypothesis was not found for democratic behavior, positive feedback, training and instruction, and autocratic behavior for the dependent variable of amotivation.

Table 17. Variance attributable to preferred and perceived leadership in amotivation by order of entry

	Initial Order			*Reverse Order*		
	Variable	R^2	$?R^2$	Variable	R^2	$?R^2$
DB	Preference	.028**	.028**	Perception	.001	.001
	Perception	.031*	.004	Preference	.031*	.031**
	Interaction	.032*	.001	Interaction	.032*	.001
PF	Preference	.063***	.063***	Perception	.013	.013
	Perception	.066***	.003	Preference	.066***	.053***
	Interaction	.068***	.002	Interaction	.068**	.002
TI	Preference	.048**	.048**	Perception	.018	.018*
	Perception	.055**	.007	Preference	.055	.037**
	Interaction	.064**	.008	Interaction	.064	.008
SC	Preference	.095***	.095***	Perception	.027*	.027*
	Perception	.105***	.010	Preference	.105***	.078***
	Interaction	.124***	.019*	Interaction	.124***	.019*
SS	Preference	.044**	.044**	Perception	.003	.003
	Perception	.046**	.002	Preference	.046**	.042**
	Interaction	.069**	.023*	Interaction	.069**	.023*
AB	Preference	.037**	.037**	Perception	.039**	.039**
	Perception	.051**	.014	Preference	.051**	.012
	Interaction	.051**	.000	Interaction	.051**	.000

*p < .05; **p < .01; ***p < .001; DB = democratic behavior; PF = positive feedback; TI = training and instruction; SC = situation consideration; SS = social support; AB = autocratic behavior

Leadership Congruency and Commitment

The leadership congruency hypothesis for each dependent variable was evaluated by performing a regression technique whereby the preference scores were entered first followed by the perceptions and the interaction term, with a reversed order of the preference and perception terms in a second set of analyses. The congruency hypothesis was accepted if the interaction significantly increased the amount of variance explained.

The regression results detailing leadership congruency for the dependent variable of sport commitment are found in Table 18. The congruency of preferred and perceived positive feedback leader behaviors resulted in a significant ($p = .017$) increase in R^2 (.021) for the dependent variable of sport commitment. Support for the congruency hypothesis was not found

for democratic behavior, training and instruction, situation consideration, social support, and autocratic behavior for the dependent variable of sport commitment.

Table 18. Variance attributable to preferred and perceived leadership in sport commitment by order of entry

	Initial Order			*Reverse Order*		
	Variable	R^2	? R^2	Variable	R^2	? R^2
DB	Preference	.087***	.087***	Perception	.000	.000
	Perception	.092***	.005	Preference	.092***	.092
	Interaction	.092***	.000	Interaction	.092***	.000
PF	Preference	.102***	.102***	Perception	.043**	.043**
	Perception	.121***	.019*	Preference	.121***	.078***
	Interaction	.141***	.021*	Interaction	.141***	.021*
TI	Preference	.171***	.171***	Perception	.023*	.023*
	Perception	.174***	.003	Preference	.174***	.150***
	Interaction	.183***	.009	Interaction	.183***	.009
SC	Preference	.150***	.150***	Perception	.011	.011
	Perception	.150***	.000	Preference	.150***	.139***
	Interaction	.150***	.000	Interaction	.150***	.000
SS	Preference	.140***	.140***	Perception	.062***	.062***
	Perception	.148***	.008	Preference	.148***	.086***
	Interaction	.148***	.000	Interaction	.148***	.000
AB	Preference	.037**	.037**	Perception	.000	.000
	Perception	.051**	.013	Preference	.051**	.051***
	Interaction	.063**	.012	Interaction	.063**	.012

*p < .05; **p < .01; ***p < .001; DB = democratic behavior; PF = positive feedback; TI = training and instruction; SC = situation consideration; SS = social support; AB = autocratic behavior

The regression results detailing leadership congruency for the dependent variable of sport enjoyment are found in Table 19. The congruency of preferred and perceived autocratic leader behaviors resulted in a significant (p = .001) increase in R^2 (.035) for the dependent variable of sport enjoyment. Support for the congruency hypothesis was not found for democratic behavior, positive feedback, training and instruction, situation consideration, and social support for the dependent variable of sport enjoyment.

Table 19. Variance attributable to preferred and perceived leadership in sport enjoyment by order of entry

	Initial Order			*Reverse Order*		
	Variable	R^2	?R^2	Variable	R^2	?R^2
DB	Preference	.230***	.230***	Perception	.004	.004
	Perception	.260***	.029**	Preference	.260***	.256***
	Interaction	.264***	.004	Interaction	.264***	.004
PF	Preference	.262***	.262***	Perception	.013	.013
	Perception	.262***	.000	Preference	.262***	.249***
	Interaction	.262***	.000	Interaction	.262***	.000
TI	Preference	.248***	.248***	Perception	.010	.010
	Perception	.249***	.001	Preference	.249***	.239***
	Interaction	.261***	.012	Interaction	.261***	.012
SC	Preference	.299***	.299***	Perception	.000	.000
	Perception	.311***	.012*	Preference	.311***	.311***
	Interaction	.314***	.003	Interaction	.314***	.003
SS	Preference	.294***	.294***	Perception	.035**	.035**
	Perception	.299***	.005	Preference	.299***	.264***
	Interaction	.309***	.010	Interaction	.309***	.010
AB	Preference	.102***	.102***	Perception	.000	.000
	Perception	.143***	.041**	Preference	.143***	.143***
	Interaction	.178***	.035**	Interaction	.178***	.035**

*p < .05; **p < .01; ***p < .001; DB = democratic behavior; PF = positive feedback; TI = training and instruction; SC = situation consideration; SS = social support; AB = autocratic behavior

The regression results detailing leadership congruency for the dependent variable of social constraints are found in Table 20. No support for the congruency hypothesis was found for democratic behavior, positive feedback, training and instruction, situation consideration, social support or autocratic behavior for the dependent variable of social constraints.

Table 20. Variance attributable to preferred and perceived leadership in social constraints by order of entry

	Initial Order			*Reverse Order*		
	Variable	R^2	?R^2	Variable	R^2	?R^2
DB	Preference	.001	.001	Perception	.001	.001
	Perception	.002	.001	Preference	.002	.002
	Interaction	.002	.000	Interaction	.002	.000
PF	Preference	.011	.011	Perception	.000	.000
	Perception	.011	.000	Preference	.011	.011
	Interaction	.026	.015	Interaction	.026	.015
TI	Preference	.003	.003	Perception	.006	.006
	Perception	.007	.004	Preference	.007	.001
	Interaction	.007	.000	Interaction	.007	.000
SC	Preference	.010	.010	Perception	.003	.003
	Perception	.011	.001	Preference	.011	.008
	Interaction	.012	.001	Interaction	.012	.001
SS	Preference	.001	.001	Perception	.000	.000
	Perception	.002	.001	Preference	.002	.002
	Interaction	.015	.013	Interaction	.015	.013
AB	Preference	.015	.015	Perception	.013	.013
	Perception	.019	.004	Preference	.019	.006
	Interaction	.019	.000	Interaction	.019	.000

*p < .05; **p < .01; ***p < .001; DB = democratic behavior; PF = positive feedback; TI = training and instruction; SC = situation consideration; SS = social support; AB = autocratic behavior

Leadership Congruency and Satisfaction

The regression results detailing leadership congruency for the dependent variable of individual performance satisfaction are found in Table 21. The congruency of preferred and perceived autocratic leader behaviors resulted in a significant (p = .004) increase in R^2 (.030) for the dependent variable of individual performance satisfaction. Support for the congruency hypothesis was not found for democratic behavior, positive feedback, training and instruction, situation consideration, and social support for the dependent variable of individual performance satisfaction.

Table 21. Variance attributable to preferred and perceived leadership in individual performance satisfaction by order of entry

	Initial Order			*Reverse Order*		
	Variable	R^2	$?R^2$	Variable	R^2	$?R^2$
DB	Preference	.157***	.157***	Perception	.003	.003
	Perception	.178***	.021*	Preference	.178***	.175***
	Interaction	.181***	.003	Interaction	.181***	.003
PF	Preference	.178***	.178***	Perception	.017*	.017*
	Perception	.179***	.001	Preference	.179***	.161***
	Interaction	.187***	.009	Interaction	.187***	.009
TI	Preference	.247***	.247***	Perception	.003	.003
	Perception	.253***	.005	Preference	.253***	.250***
	Interaction	.256***	.003	Interaction	.256***	.003
SC	Preference	.242***	.242***	Perception	.002	.002
	Perception	.247***	.004	Preference	.247***	.245***
	Interaction	.247***	.001	Interaction	.247***	.001
SS	Preference	.201***	.201***	Perception	.044**	.044**
	Perception	.201***	.000	Preference	.201***	.157***
	Interaction	.204***	.003	Interaction	.204***	.003
AB	Preference	.062***	.062***	Perception	.006	.006
	Perception	.112***	.050***	Preference	.112***	.106***
	Interaction	.142***	.030**	Interaction	.142***	.030**

*p < .05; **p < .01; ***p < .001; DB = democratic behavior; PF = positive feedback; TI = training and instruction; SC = situation consideration; SS = social support; AB = autocratic behavior

The regression results detailing leadership congruency for the dependent variable of personal treatment satisfaction are found in Table 22. The congruency of preferred and perceived training and instruction leader behaviors resulted in a significant (p = .028) increase in R^2 (.011) for the dependent variable of personal treatment satisfaction. In addition, the congruency of preferred and perceived autocratic leader behaviors resulted in a significant (p = .015) increase in R^2 (.019) for the dependent variable of personal treatment satisfaction. Support for the congruency hypothesis was not found for democratic behavior, positive feedback, situation consideration, and social support for the dependent variable of personal treatment satisfaction.

Table 22. Variance attributable to preferred and perceived leadership in personal treatment satisfaction by order of entry

	Initial Order			*Reverse Order*		
	Variable	R^2	?R^2	Variable	R^2	?R^2
DB	Preference	.386***	.386***	Perception	.013	.013
	Perception	.452***	.066***	Preference	.452***	.440***
	Interaction	.454***	.002	Interaction	.454***	.002
PF	Preference	.545***	.545***	Perception	.010	.010
	Perception	.550***	.006	Preference	.550***	.540***
	Interaction	.551***	.001	Interaction	.551***	.001
TI	Preference	.441***	.441***	Perception	.022*	.022*
	Perception	.442***	.000	Preference	.442***	.420***
	Interaction	.453***	.011*	Interaction	.453***	.011*
SC	Preference	.512***	.512***	Perception	.006	.006
	Perception	.518***	.006	Preference	.518***	.512***
	Interaction	.518***	.000	Interaction	.518***	.000
SS	Preference	.479***	.479***	Perception	.062***	.062***
	Perception	.485***	.006	Preference	.485***	.423***
	Interaction	.490***	.005	Interaction	.490***	.005
AB	Preference	.135***	.135***	Perception	.002	.002
	Perception	.199***	.065***	Preference	.199***	.198***
	Interaction	.219***	.019*	Interaction	.219***	.019*

*p < .05; **p < .01; ***p < .001; DB = democratic behavior; PF = positive feedback; TI = training and instruction; SC = situation consideration; SS = social support; AB = autocratic behavior

The regression results detailing leadership congruency for the dependent variable of team performance satisfaction are found in Table 23. The congruency of preferred and perceived autocratic leader behaviors resulted in a significant (p = .004) increase in R^2 (.032) for the dependent variable of team performance satisfaction. Support for the congruency hypothesis was not found for democratic behavior, positive feedback, training and instruction, situation consideration, and social support for the dependent variable of team performance satisfaction.

Table 23. Variance attributable to preferred and perceived leadership in team performance satisfaction by order of entry

	Initial Order			*Reverse Order*		
	Variable	R^2	$?R^2$	Variable	R^2	$?R^2$
DB	Preference	.148***	.148***	Perception	.001	.001
	Perception	.152***	.004	Preference	.152***	.151***
	Interaction	.156***	.005	Interaction	.156***	.004
PF	Preference	.127***	.127***	Perception	.002	.002
	Perception	.129***	.002	Preference	.129***	.127***
	Interaction	.130***	.001	Interaction	.130***	.001
TI	Preference	.115***	.115***	Perception	.000	.000
	Perception	.125***	.010	Preference	.125***	.125***
	Interaction	.125***	.000	Interaction	.125***	.000
SC	Preference	.148***	.148***	Perception	.000	.000
	Perception	.156***	.008	Preference	.156***	.156***
	Interaction	.158***	.002	Interaction	.158***	.002
SS	Preference	.147***	.147***	Perception	.023*	.023*
	Perception	.147***	.001	Preference	.147***	.124***
	Interaction	.148***	.001	Interaction	.148***	.001
AB	Preference	.019*	.019*	Perception	.009	.009
	Perception	.053**	.034**	Preference	.053**	.044**
	Interaction	.085***	.032**	Interaction	.085***	.032**

*p < .05; **p < .01; ***p < .001; DB = democratic behavior; PF = positive feedback; TI = training and instruction; SC = situation consideration; SS = social support; AB = autocratic behavior

The regression results detailing leadership congruency for the dependent variable of training and instruction satisfaction are found in Table 24. The congruency of preferred and perceived autocratic leader behaviors resulted in a significant (p = .001) increase in R^2 (.040) for the dependent variable of training and instruction satisfaction. Support for the congruency hypothesis was not found for democratic behavior, positive feedback, training and instruction, situation consideration, and social support for the dependent variable of training and instruction satisfaction.

Table 24. Variance attributable to preferred and perceived leadership in training and instruction satisfaction by order of entry

	Initial Order			*Reverse Order*		
	Variable	R^2	ΔR^2	Variable	R^2	ΔR^2
DB	Preference	.320***	.320***	Perception	.024*	.024*
	Perception	.403***	.083***	Preference	.403***	.379***
	Interaction	.412***	.009	Interaction	.412***	.009
PF	Preference	.364***	.364***	Perception	.009	.009
	Perception	.367***	.002	Preference	.367***	.358***
	Interaction	.369***	.002	Interaction	.369***	.002
TI	Preference	.563***	.563***	Perception	.003	.003
	Perception	.581***	.018**	Preference	.581***	.578***
	Interaction	.581***	.000	Interaction	.581***	.000
SC	Preference	.580***	.580***	Perception	.000	.000
	Perception	.607***	.028***	Preference	.607***	.607***
	Interaction	.608***	.001	Interaction	.608***	.001
SS	Preference	.382***	.382***	Perception	.045**	.045**
	Perception	.389***	.007	Preference	.389***	.345***
	Interaction	.391***	.002	Interaction	.391***	.002
AB	Preference	.093***	.093***	Perception	.002	.002
	Perception	.141***	.047***	Preference	.141***	.139***
	Interaction	.181***	.040**	Interaction	.181***	.040**

*p < .05; **p < .01; ***p < .001; DB = democratic behavior; PF = positive feedback; TI = training and instruction; SC = situation consideration; SS = social support; AB = autocratic behavior

Overall, the results of this study indicated congruency of certain preferred and perceived leadership behaviors significantly predicted intrinsic motivation to know, intrinsic motivation to experience stimulation, extrinsic motivation identified, amotivation, sport commitment, sport enjoyment, individual performance satisfaction, personal treatment satisfaction, team performance satisfaction, and training and instruction satisfaction. The findings are discussed in the context of Chelladurai's (1999) Multidimensional Model of Leadership in the following chapter.

CHAPTER 5

DISCUSSION

The purpose of this chapter is to discuss the implications of this study. The chapter is presented in six sections which include: (a) Demographic Differences for Preferred Leadership Behavior; (b) Leadership Congruency and Motivation; (c) Leadership Congruency and Commitment; (d) Leadership Congruency and Satisfaction; (e) Overall Conclusions, and (f) Directions for Future Research.

Demographic Differences for Preferred Leadership Behavior

As noted in Hypothesis 1a, it was anticipated that the ability level of the collegiate tennis players, as defined by NCAA division level, would be a determinant of preferred leadership behavior. However, the results indicated that the NCAA division level of the athlete was a non-significant predictor of preferred leadership behavior ($F = 1.717$; $p = .06$). This finding contrasts with prior research that has characterized ability in terms of competition level (i.e., high school vs. university: Chelladurai & Carron, 1983; Schubiger, 1993; intramural vs. intercollegiate: Erle, 1981; NCAA division levels I and II: Beam, 2002; Riemer & Toon, 2001; elite vs. club: Terry, 1984). The results from prior investigations have generally supported that athletes of a lesser ability prefer more positive feedback than those with more ability (Erle, 1981; Riemer & Toon, 2001; Terry, 1984). Furthermore, research has indicated that more able athletes (i.e., collegiate level) prefer more social support when compared to those with lesser ability (i.e., high school level) (Chelladurai & Carron, 1983; Schubiger, 1993). These conclusions support the notion that preferred leadership behavior is dependent upon member ability.

Perhaps the reason why differences in preferred leadership behavior based on ability level were not found in the present study lies with the sample itself. This study sampled athletes from all three NCAA Division levels, while prior research has only examined differences among NCAA Divisions I and II (Beam, 2002; Riemer & Toon, 2001). Although the differences in ability level between NCAA Division level I and II athletes are fairly pronounced, Riemer and

Toon (2001) noted that it is possible that the athletes or teams from top Division II programs could be better athletes or teams than their counterparts from bottom level Division I programs. To control for this potential confounding variable, Riemer and Toon (2001) only collected data from athletes who qualified for and participated in the NCAA season-ending championship tournament. These athletes were presumably from the top teams in each division. Another study that analyzed leadership preferences based on NCAA Division level only sampled selected universities in the southeastern United States out of convenience (Beam, 2002).

The present study sampled from a population that included all NCAA tennis teams rather than those who had qualified for the season-ending NCAA championship tournament (Riemer & Toon, 2001) or competed in select geographical areas (Beam, 2002) or only in NCAA Division levels I and II (Beam, 2002; Riemer & Toon, 2001). While the design of the current study allows for increased generalization among all NCAA tennis players when compared to past studies, the sample does not control for differences in ability level to the degree of Riemer and Toon's (2001) study. The possibility exists that top players in each division (i.e., NCAA Division II and III) could possess superior ability when compared to their counterparts from bottom level programs in the next progressive division (i.e., NCAA Division I and II, respectively). Although Riemer and Toon (2001) have commented on the distinct demarcation in ability levels between Division I and II tennis players, perhaps the level of competition between Division II and III tennis players do not vary to the same degree. Different findings could also result from the fact that Riemer and Toon (2001) utilized the Leadership Scale for Sports for measurement while the present study incorporated the Revised Leadership Scale for Sports, an instrument designed to be more culturally specific to college athletes in the United States (Zhang et al., 1997).

For Hypothesis 1b, the ability level of the collegiate tennis players, as defined by singles starting status was predicted to determine preferred leadership behavior. However, the results indicated that the singles starting status of the athlete was a non-significant predictor of preferred leadership behavior ($F = 0.351$; $p = .91$). Prior research that classified ability level in terms of starters and nonstarters only examined perceived rather than preferred leadership behavior (Garland & Barry, 1988). However, when interpreting the results from the present study, it is important to note a potential confounding variable. The present study only characterized starting status based on the athlete's singles rank on the team. Among respondents, this rank varied from

a high of one to a low of twenty. NCAA intercollegiate tennis competition includes a total of six singles and three doubles events per dual match. While only the top six ranked singles players participate in singles competition, the participants in doubles competition could include the same six players or a combination of other players ranked outside of the top six positions in singles play.

When compared to singles, doubles play offers a higher degree of interdependence among team players as each participant must also rely on the skill and talents of his/her partner. Furthermore, doubles players must be cognizant of more environmental variables than singles players since doubles players must not only monitor the court position of their partner, but also the court positions of two opponents. In addition, the game of doubles is generally characterized as having more aggressive net play than singles, which requires a unique set of skills (Benjamin, 1989; Bollettieri, 2001; Braden & Wool, 1993; Kriese, 1997). Indeed, even the professional men's and women's tennis tours are littered with athletes who participate only in doubles competitions, thus supporting the notion of a unique subset of skills required to play doubles. Therefore, it is quite possible that collegiate tennis coaches may select players to participate in doubles who are ranked outside the top six singles players on the team. Players ranked outside the top six in singles but within the top six in doubles would likely characterize themselves as starters. However, such players were classified as nonstarters for the purposes of this study since only singles rank was assessed. Future research involving a similar population should account for the starting role of playing who only participate in doubles.

Hypothesis 2 predicted that the gender of the collegiate tennis players would be a determinant of preferred leadership behavior. However, the results indicated that the gender of the athlete was a non-significant predictor of preferred leadership behavior ($F = 1.335$; $p = .24$). This finding conflicts with the results of numerous studies. Chelladurai and Saleh (1978) found that female athletes preferred more social support behavior than their male counterparts among a sample of recreational and competitive athletes. However, Riemer and Toon (2001) examined collegiate athletes and found female athletes to only prefer more social support behavior when they were coached by males. In contrast to prior research, Erle (1981) examined intramural and intercollegiate hockey players and found that male intramural and intercollegiate hockey players preferred more training and instruction, autocratic behavior and social support from their coaches than females. However, female players preferred more democratic leadership behavior from

their coaches when compared to the male players. In support of Erle's (1981) findings, Terry (1984) found males to prefer more autocratic behavior than females in a sample of competitive elite athletes.

Contrary to prior research, the present study found no differences in preferred leadership based on the gender of the athletes. Another recent study incorporating NCAA Division I and II athletes from a variety of sports also found no differences in preferred leadership based on gender alone (Beam, 2002). A potential explanation for such findings could be the advancement of women's collegiate athletics through the legislation of Title IX. As a result of Title IX, women now have more opportunities to participate in competitive sport when compared to the data collection periods of previous studies (Chelladurai & Saleh, 1978; Erle, 1981). According to Lopiano (2000), only one of 27 high school girls played varsity sports in 1972. By 1998, female participation in high school varsity sports had risen to one in three. Overall participation rates for female athletes at the high school, college, and Olympic levels from 1972 to 1996 have increased 202.5%, 291.5%, and 248.3%, respectively (Lopiano, 2000). Awareness and prestige of women's collegiate sports has risen due to increased participation possibilities and media exposure. The modern female collegiate athlete likely has more exposure to competition prior to entering the collegiate ranks than ever before. Women who participate in sports report several psychological benefits including positive feelings about body image, improved self-esteem, tangible experiences of competency and success, and increased self confidence (Women's Sports Foundation, 1989). Perhaps it is this increased exposure to competition and opportunity to participate that has transformed the leadership preferences of today's female athletes to comparable preference levels of male athletes, who have experienced such participation opportunities for quite some time. Further research regarding this proposed shrinking gender gap is warranted.

Leadership Congruency and Motivation

As noted in Hypothesis 3, it was anticipated that intrinsic motivation would be dependent on the congruence between preferred and perceived leadership behaviors. The congruency of preferred and perceived autocratic leader behaviors resulted in a significant ($p = .038$) increase in R^2 (.017) for the dependent variable of intrinsic motivation to know. Therefore, if the coach provides the desired level of autocratic behavior, he or she has the capability to enhance the athlete's intrinsic desire to perform an activity for the pleasure and satisfaction experienced

while learning, exploring, or trying to understand something new. For the remaining leadership behaviors, preference scores were better predictors of intrinsic motivation to know for democratic behavior, situation consideration, and social support, but perception scores better predicted intrinsic motivation to know for positive feedback and training and instruction behaviors. Among all preference and perception scores, social support preference accounted for the largest variance in intrinsic motivation to know with 8.6% of accounted variance.

No support for the congruency hypothesis was found for democratic behavior, positive feedback, training and instruction, situation consideration, social support or autocratic behavior for the dependent variable of intrinsic motivation toward accomplishment. Intrinsic motivation toward accomplishment can be defined as engaging in an activity for the pleasure and satisfaction experienced when one attempts to accomplish or create something. Preference scores were better predictors of intrinsic motivation toward accomplishment for democratic behavior, situation consideration, social support, and autocratic behavior, but perception scores better predicted intrinsic motivation toward accomplishment for positive feedback and training and instruction behaviors. Among all preference and perception scores, social support preference accounted for the largest variance in intrinsic motivation toward accomplishment with 9.1% of accounted variance.

The congruency of preferred and perceived positive feedback leader behaviors resulted in a significant ($p = .013$) increase in R^2 (.023) for the dependent variable of intrinsic motivation to experience stimulation. Therefore, if the coach provides the desired level of positive feedback, he or she has the capability to affect the athlete's intrinsic desire to engage in an activity in order to experience stimulating sensations (i.e. sensory pleasure, aesthetic experiences, as well as fun and excitement) derived from one's engagement in the activity. For the remaining leadership behaviors, preference scores were better predictors of intrinsic motivation to experience stimulation for democratic behavior, training and instruction, situation consideration, social support, and autocratic behavior. Among all preference and perception scores, social support preference accounted for the largest variance in intrinsic motivation to experience stimulation with 7.9% of accounted variance.

In summary, Hypothesis 3 only received partial support since the congruency of preferred and perceived autocratic leader behaviors predicted intrinsic motivation to know, and the congruency of preferred and perceived positive feedback leader behaviors predicted intrinsic

motivation to experience stimulation. The leadership behavior congruency hypothesis was not supported for the variable of intrinsic motivation toward accomplishment. Although no previous research has examined intrinsic motivation as a consequence of leadership behavior congruency, Amorose and Horn (2000) found that "coaches who exhibit a leadership style characterized by low levels of autocratic behavior and who provide high frequencies of positive, encouraging, and informationally based feedback and low frequencies of ignoring players' successes and failures may create an environment that facilitates the development of intrinsic motivation in their athletes (p. 78)." This result is consistent with other findings (Black & Weiss, 1992; Pelletier & Vallerand, 1985; Vallerand & Pelletier, 1985) and with cognitive evaluation theory (Deci & Ryan, 1985). Indeed, the athletes surveyed in this study perceived their coaches to provide low levels of autocratic behavior (2.89 ± 1.04) and high levels of positive feedback (5.94 ± 0.78) and training and instruction behaviors (5.84 ± 0.81), which would facilitate the development of intrinsic motivation according to Amorose and Horn (2000). More research regarding the effect of congruency of preferred and perceived leadership behaviors on the differing targets of intrinsic motivation seems warranted.

For Hypothesis 4, extrinsic motivation was not predicted to be dependent on the congruence between preferred and perceived leadership behaviors. The congruency of preferred and perceived autocratic leader behaviors resulted in a significant ($p = .011$) increase in R^2 (.026) for the dependent variable of extrinsic motivation identified. Therefore, if the coach provides the desired level of autocratic behavior, he or she has the capability to affect the athlete's ability to value and judge the behavior as important, which subsequently causes the individual to perform the behavior out of choice. For the remaining leadership behaviors, preference scores were better predictors of extrinsic motivation identified for democratic behavior, positive feedback, training and instruction, and situation consideration, but perception scores better predicted extrinsic motivation identified for social support behaviors. Among all preference and perception scores, social support perceptions accounted for the largest variance in extrinsic motivation identified with 6.3% of accounted variance.

No support for the congruency hypothesis was found for democratic behavior, positive feedback, training and instruction, situation consideration, social support or autocratic behavior for the dependent variable of extrinsic motivation external regulation. Extrinsic motivation external regulation refers to behavior that is controlled by external sources, such as material

rewards or constraints imposed by others. Preference scores were better predictors of extrinsic motivation external regulation for training and instruction and autocratic behavior, but perception scores better predicted extrinsic motivation external regulation for positive feedback and social support behaviors. Among all preference and perception scores, autocratic behavior preference accounted for the largest variance in intrinsic motivation toward accomplishment with 4.7% of accounted variance.

In summary, Hypothesis 4 only received partial support since the congruency of preferred and perceived autocratic leader behaviors predicted extrinsic motivation identified. The leadership behavior congruency hypothesis was not supported for the variable of extrinsic motivation external regulation, and the leadership congruency hypothesis for extrinsic motivation introjected was not examined due to low scale reliability. No prior research has examined the effect of leadership behavior on extrinsic motivation in sport, which prompted the adoption of a null hypothesis. However, the results of this study provide support for the consideration of extrinsic motivation as a potential consequence of leadership behavior congruency.

Finally, Hypothesis 5 predicted that amotivation would not be dependent on the congruence between preferred and perceived leadership behaviors. The congruency of preferred and perceived situation consideration leader behaviors resulted in a significant ($p = .023$) increase in R^2 (.019) for the dependent variable of amotivation. In addition, the congruency of preferred and perceived social support leader behaviors resulted in a significant ($p = .015$) increase in R^2 (.023) for the dependent variable of amotivation. Therefore, if the coach provides the desired level of situation consideration and social support behaviors, he or she has the capability to influence the athlete's ability to identify good reasons to continue training for their sport. For the remaining leadership behaviors, preference scores were better predictors of amotivation for democratic behavior, positive feedback, and training and instruction, but perception scores better predicted amotivation for autocratic behavior. Among all preference and perception scores, situation consideration preferences accounted for the largest variance in extrinsic motivation identified with 9.5% of accounted variance.

In summary, Hypothesis 5 was rejected on the basis that the congruency of preferred and perceived situation consideration and social support behaviors predicted amotivation. No prior research has directly examined the effect of leadership behavior on amotivation in sport, which

prompted the adoption of a null hypothesis. However, researchers have examined the phenomenon of burnout, which has been linked to high levels of amotivation in tennis players (Gould, Udry, Tuffey, & Loehr, 1996; Harlick & McKenzie, 2000). Burnout has been defined as "an exhaustive psychophysiological response exhibited as a result of frequent, sometimes extreme, and generally ineffective efforts to meet excessive training and competitive demands (Weinberg & Gould, 1999, p. 435)." The characteristics of burnout include exhaustion, depersonalization (i.e., being impersonal and unfeeling), and feelings of low personal accomplishment, self-esteem, failure, and depression. Athletes experiencing amotivation have considerable difficulty identifying good reasons to continue training for their sport. If amotivation continues, the athlete may likely cease participation in the sport altogether. The results of the present study suggest that leadership behaviors of coaches do have the capacity to impact amotivation behavior in their respective athletes. Considering the strong link between amotivation and the phenomenon of burnout, coaches would be wise to monitor their leadership behavior to ensure they are meeting the needs of their athletes.

Leadership Congruency and Commitment

Hypothesis 6 predicted that sport commitment and its determinants would be dependent on the congruence between preferred and perceived leadership behaviors. The congruency of preferred and perceived positive feedback leader behaviors resulted in a significant ($p = .017$) increase in R^2 (.021) for the dependent variable of sport commitment. Therefore, if the coach provides the desired level of positive feedback behavior, he or she has the capability to influence the athlete's desire to resolve or continue sport participation. For the remaining leadership behaviors, preference scores were better predictors of sport commitment for democratic behavior, training and instruction, situation consideration, social support, and autocratic behavior. Among all preference and perception scores, training and instruction preferences accounted for the largest variance in sport commitment with 17.1% of accounted variance.

The congruency of preferred and perceived autocratic leader behaviors resulted in a significant ($p = .001$) increase in R^2 (.035) for the dependent variable of sport enjoyment. Therefore, if the coach provides the desired level of autocratic behavior, he or she has the capability to influence the athlete's positive affective response to the sport experience that reflects generalized feelings such as pleasure, liking, and fun. For the remaining leadership behaviors, preference scores were better predictors of sport enjoyment for democratic behavior,

positive feedback, training and instruction, situation consideration, and social support. Among all preference and perception scores, situation consideration preferences accounted for the largest variance in sport commitment with 29.9% of accounted variance.

No support for the congruency hypothesis was found for democratic behavior, positive feedback, training and instruction, situation consideration, social support or autocratic behavior for the dependent variable of social constraints. Social constraints include the social expectations or norms that create feelings of obligation to remain in the activity. Preference scores were better predictors of social constraints for positive feedback, situation consideration, social support, and autocratic behavior, but perception scores better predicted social constraints for training and instruction behavior. Among all preference and perception scores, positive feedback preference accounted for the largest variance in intrinsic motivation toward accomplishment with 1.1% of accounted variance.

In summary, Hypothesis 6 was partially supported since the congruency of preferred and perceived positive feedback behavior predicted sport commitment, and the congruency of preferred and perceived autocratic behavior impacted sport enjoyment. The leadership behavior congruency hypothesis was not supported for the variable of social constraints, and the leadership congruency hypothesis for involvement opportunities was not examined due to low scale reliability. The results of this study affirm prior research that has shown leadership, as an organizational characteristic, to be predictive of commitment (Glisson & Durick, 1988; Morris & Sherman, 1981). Sport commitment operates under a similar basis as organizational commitment, but it possesses a different focus or target of the behavior. Among sport-related studies, Price and Weiss (2000) showed that coaching behaviors can influence an athlete's continued involvement in sport, which is the operational definition of sport commitment participation (Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993). The results of this study support the notion that leadership behavior (i.e., positive feedback and autocratic behaviors) can alter sport commitment and its determinants, particularly positive feedback and autocratic behaviors.

Leadership Congruency and Satisfaction

The final hypothesis suggested that athlete satisfaction would be dependent on the congruence between preferred and perceived leadership behaviors. The congruency of preferred and perceived autocratic leader behaviors resulted in a significant ($p = .004$) increase in R^2 (.030)

for the dependent variable of individual performance satisfaction. Therefore, if the coach provides the desired level of autocratic behavior, he or she has the capability to influence the athlete's satisfaction with his or her own task performance. Task performance includes absolute performance, improvements in performance, and goal achievement. For the remaining leadership behaviors, preference scores were better predictors of individual performance satisfaction for democratic behavior, positive feedback, training and instruction, situation consideration, and social support. Among all preference and perception scores, training and instruction preferences accounted for the largest variance in individual performance satisfaction with 24.7% of accounted variance.

The congruency of preferred and perceived training and instruction leader behaviors resulted in a significant ($p = .028$) increase in R^2 (.011) for the dependent variable of personal treatment satisfaction. In addition, the congruency of preferred and perceived autocratic leader behaviors resulted in a significant ($p = .015$) increase in R^2 (.019) for the dependent variable of personal treatment satisfaction. Therefore, if the coach provides the desired level of training and instruction and autocratic behaviors, he or she has the capability to influence the athlete's satisfaction with those coaching behaviors that directly affect the individual yet indirectly affect team development (i.e., social support and positive feedback). For the remaining leadership behaviors, preference scores were better predictors of personal treatment satisfaction for democratic behavior, positive feedback, situation consideration, and social support. Among all preference and perception scores, positive feedback preferences accounted for the largest variance in personal treatment satisfaction with 54.5% of accounted variance.

The congruency of preferred and perceived autocratic leader behaviors resulted in a significant ($p = .004$) increase in R^2 (.032) for the dependent variable of team performance satisfaction. Therefore, if the coach provides the desired level of autocratic behavior, he or she has the capability to influence the athlete's satisfaction with his or her team's level of performance. Task performance includes absolute performance, goal achievement, and implies performance improvements. For the remaining leadership behaviors, preference scores were better predictors of team performance satisfaction for democratic behavior, positive feedback, training and instruction, situation consideration, and social support. Among all preference and perception scores, democratic behavior preferences and situation consideration preferences

accounted for the largest variance in team performance satisfaction with each variable explaining 14.8% of accounted variance.

The congruency of preferred and perceived autocratic leader behaviors resulted in a significant ($p = .001$) increase in R^2 (.040) for the dependent variable of training and instruction satisfaction. Therefore, if the coach provides the desired level of autocratic behavior, he or she has the capability to influence the athlete's satisfaction with the training and instruction provided by the coach. For the remaining leadership behaviors, preference scores were better predictors of training and instruction satisfaction for democratic behavior, positive feedback, training and instruction, situation consideration, and social support. Among all preference and perception scores, situation consideration preferences accounted for the largest variance in training and instruction satisfaction with 58.0% of accounted variance.

In summary, Hypothesis 7 was supported since the congruency of preferred and perceived autocratic behavior predicted individual performance satisfaction, and the congruency of preferred and perceived training and instruction and autocratic behaviors impacted personal treatment satisfaction. Furthermore, the congruency of preferred and perceived autocratic behavior influenced team performance satisfaction, and the congruency of preferred and perceived autocratic behavior affected training and instruction satisfaction. The finding that leadership behavior congruency is related to satisfaction has been supported by other studies (Chelladurai, 1984; Horne & Carron, 1985; Riemer & Chelladurai, 1995; Schliesman, 1987).

Chelladurai (1984) classified the moderating influence of type of sport as independent or interdependent and open or closed. Athletes who play sport classified as independent rely very little on their teammates during their individual performance. Examples of such sports include tennis, golf, and track and field. On the contrary, sports classified as interdependent include basketball, football, volleyball, and soccer. Open sports are characterized by an unstable to changing environment. Such sports include basketball, football, volleyball, soccer, and tennis. Closed sports have relatively stable environments such as golf, bowling, and track and field.

Chelladurai (1984) found perception and preference discrepancy with democratic behavior, positive feedback, training and instruction, social support, and autocratic behavior to be related to basketball (an interdependent open sport) players' satisfaction with their coach's leadership. The results from wrestlers (an independent open sport) suggested that only discrepancies in positive feedback, training and instruction, and social support significantly

predicted satisfaction. Finally, the discrepancies in training and instruction and autocratic behavior of track and field (an independent closed sport) athletes impacted satisfaction levels. A subsequent study by Schliesman (1987) found that discrepancies in democratic behavior and social support of track and field athletes influenced satisfaction levels, which contrasted with Chelladurai's (1984) findings among track and field athletes.

Horne and Carron (1985) surveyed female Canadian intercollegiate athletes from numerous sports including volleyball, basketball, track and field, and swimming. The results showed that the variables predicting athlete satisfaction were discrepancy between athlete perceptions and preferences for positive feedback, training and instruction, and social support. Furthermore, the discrepancy of preferred and perceived positive feedback behaviors predicted athlete performance perceptions, which is akin to individual performance satisfaction. However, Horne and Carron (1985) elected not to separate the moderating influence of type of sport due to the relatively small sample size encountered in their study.

A discussion of prior research on the leadership congruency hypothesis would be incomplete without the mention of the controversy surrounding the use of discrepancy scores in research. Peter, Churchill, and Brown (1993) identified several problems inherent in the use of discrepancy or difference scores. First, the reliability of discrepancy scores decreases as the correlation between preferences and perceptions increases (e.g., if the correlation is relatively high, it is likely that most of the variance in discrepancies is due to error). Second, restriction of the variance (i.e., when one of the perception or preference scores is consistently greater than the other) may also be problematic (Peter, Churchill, & Brown, 1993). Finally, since discrepancy scores are not unique from their component parts, any relationship between the discrepancy scores and variables of interest is most likely spurious. All three of the aforementioned studies involving the relationship between leadership and satisfaction (Chelladurai, 1984; Horne & Carron, 1985; Schliesman, 1987) utilized discrepancy scores, which may explain their inconsistent results.

Riemer and Chelladurai (1995) pointed out that Cronbach (1958) has demonstrated how the interaction of two component parts (i.e., preferences and perceptions) is equivalent to the differences of those components. Therefore, researchers can avoid difference scores by entering each component separately into a regression followed by the interaction of those two terms. Such a procedure would allow one to examine whether the interaction (preferences x

perceptions) significantly increases the variance explained by the main effects (component parts). Cronbach (1958) noted that an interaction hypothesis is justified "only if it improves significantly (p. 356)" upon the simpler (non-interactive) prediction. Riemer and Chelladurai (1995) subsequently utilized this new procedure to analyze a sample of 201 male NCAA Division I-AA football players from three universities. The results indicated that congruence of preferred and perceived social support behaviors enhanced athlete satisfaction.

In a critique of their own study, Riemer and Chelladurai (1995) posit that the lack of variance in satisfaction scores might be due to the use of a single-item measure for the variable of satisfaction, which had also been used in previous studies (Chelladurai, 1984; Horne & Carron, 1985; Schliesman, 1987). As a result, Reimer and Chelladurai (1998) developed their own multi-item measure of athlete satisfaction, which was later utilized by Riemer and Toon (2001) to evaluate the leadership congruency hypothesis of the Multidimensional Model of Leadership. The study found no support for the leadership congruency hypothesis among a sample of 148 tennis players who were competing in the NCAA Division I and II Championships. These results diverge with those of the present study, which found preferred and perceived autocratic behavior to impact satisfaction with individual performance, personal treatment, team performance, and training and instruction. In addition, the congruence of preferred and perceived training and instruction behavior predicted satisfaction with personal treatment.

The contrasting results between the study of Riemer and Toon (2001) and the current study could be the result of several differences between the studies. First, Riemer and Toon (2001) utilized the Leadership Scale for Sports (Chelladurai & Saleh, 1980) rather than the Revised Leadership Scale for Sports (Zhang et al., 1997). Zhang et al. (1997) claimed to have improved the original LSS in several ways: (a) the items were generated through interviewing the coaches, hence, they are sports specific; (b) the study was conducted in the United States and the regulations of the National Collegiate Athletic Association were considered, thus, the scale is more culturally specific to the United States; (c) involvement of large samples of subjects in a variety of sports improves the generalizability and the application of the scale; (d) the measurement properties of the coaching self-evaluation version were tested and improved; and (e) overall factor structures in determining the constructs of the scale were notably improved. Therefore, Riemer and Toon (2001) could have obtained different results since they sampled a

United States population with a scale that was not as culturally specific to the United States as the scale used in the present study. Furthermore, Riemer and Toon (2001) suggested that the validity of the congruency hypothesis might be a function of situational conditions. A leadership behavior dimension entitled situation consideration is included in the RLSS but is not present in the LSS.

Second, Riemer and Toon (2001) noted low internal consistency estimates for preferred autocratic behavior (0.67) and perceived autocratic behavior (0.59), but chose to retain the dimension based on the practice of prior research (Chelladurai, 1993; Chelladurai & Riemer, 1998). The current study was not affected by low internal consistency estimates for measures of leader behavior and excluded all other variables that failed to achieve the level advocated by Nunnally and Bernstein (1994).

Finally, Riemer and Toon (2001) only sampled participants in the NCAA Divisions I and II Championships. Since participation in the NCAA Championships is based on individual and team performance, Riemer and Toon's (2001) sample is likely composed of the most highly skilled athletes in each division. The present sample incorporates tennis players from all three NCAA divisions, regardless of individual or team performance.

Overall Conclusions

The results did not support that differences in ability level and gender affected preferred leadership behavior. These findings contrast with prior research involving ability level (Chelladurai & Carron, 1983; Erle, 1981; Riemer & Toon, 2001; Schubiger, 1993; Terry, 1984) and gender (Chelladurai & Saleh, 1978; Erle, 1981). The lack of significant findings for leadership preferences in respect to ability level was attributed to the relatively broad sample selection that included all three NCAA divisions, the incorporation of a newer measurement instrument (Revised Leadership Scale for Sports), and the conceptualization of singles starting versus non-starting athletes in this study, which did not account for athletes who only participate in doubles play. Significant differences in leadership preferences based on gender were not found, which coincides with the results of other research (Beam, 2001; Terry & Howe, 1984). The findings were attributed to a proposed shrinking gender gap that may have resulted due to increased participation opportunities for women in sport (Lopiano, 2000).

The present study provides support for the congruency hypothesis of the Multidimensional Model of Leadership for the outcomes of motivation, commitment, and

satisfaction. In particular, the congruency of certain preferred and perceived leadership behaviors predicted intrinsic motivation to know, intrinsic motivation to experience stimulation, extrinsic motivation identified, amotivation, sport commitment, sport enjoyment, individual performance satisfaction, personal treatment satisfaction, team performance satisfaction, and training and instruction satisfaction. Moreover, congruency of autocratic behavior appeared to be the most influential behavioral predictor as it significantly affected intrinsic motivation to know, extrinsic motivation identified, sport enjoyment, individual performance satisfaction, personal treatment satisfaction, team performance satisfaction, and training and instruction satisfaction. However, athletes reported lower preferred levels of autocratic behavior (3.51 ± 0.99) than any other leadership behavior. Therefore, coaches should ensure that they are meeting their athletes' relatively low preferences for autocratic behavior if they wish to alter any of the aforementioned outcomes of autocratic behavior congruency. More research is needed to examine the full role that leadership behavior plays regarding a number of potential physical and psychological outcomes.

Directions for Future Research

Despite the numerous research efforts involving leadership in sport, many opportunities for future research exist. First, no research has yet explored a full test (i.e., required, preferred and perceived leadership behaviors) of the congruency hypothesis in the Multidimensional Model of Leadership. Some prior research has examined the effect of preferred and perceived leadership behavior congruency on satisfaction, but these studies incorporated single-item measures of satisfaction and utilized discrepancy scores to evaluate the congruency hypothesis (Chelladurai, 1984; Horne & Carron, 1985; Schliesman, 1987). As later noted by Chelladurai and Riemer (1998), "An implication of the [use of discrepancy scores] is that any results of research using discrepancy scores are not tenable (p. 245)." Riemer and Chelladurai (1995) evaluated the relationship between preferred and perceived leadership behavior congruency and satisfaction using a regression technique involving term interaction, but the authors still retained a single-item measure of satisfaction. The only examples of research evaluating the congruency hypothesis with the proper regression technique and multiple-item measures of satisfaction are the present study and a study conducted by Riemer and Toon (2001). However, both studies only evaluated the congruence of preferred and perceived leadership behaviors rather than the congruence of preferred, perceived, and required behaviors. As noted by Chelladurai and

Riemer (1998), a full test of the overall congruency hypothesis "would entail an examination of three two-way interactions and one three-way interaction (p. 245)."

Second, the leadership congruency hypothesis should be tested in a variety of different settings such as interdependent (i.e., basketball, football, and soccer), independent (i.e., golf, bowling, and track and field), open (i.e., football, basketball, and baseball), and closed (i.e. golf, swimming, and track and field) sports. Both studies utilizing a proper regression technique and multiple-item measures of satisfaction when evaluating the leadership congruency hypothesis have sampled intercollegiate tennis players in the United States. Future studies should incorporate other populations to support the generalizability of the Multidimensional Model of Leadership.

Third, future research can examine the controversy surrounding the inclusion of separate autocratic and democratic behavior dimensions within the LSS and RLSS. Critics of the inclusion of both measures claim that both dimensions simply measure extremes of the same behavior, while proponents cite distinct properties measured in each behavior. Presently, research supports claims from both sides of the issue.

When examining gender differences regarding leadership behavior, Erle (1981) found males to prefer more autocratic and less democratic behavior than females. Similarly, Liukkonen and Salminen (1990) discovered that high-ability athletes perceived their coaches to be more autocratic and less democratic when compared to low-ability athletes. In addition, Al-Tahayneh (2003) recently found athletes who perceived their coaches as exhibiting more democratic behavior and less autocratic behavior were more satisfied and less burned out. All three of the aforementioned studies found autocratic and democratic behavior preferences to span in opposite direction, which could support a claim that both factors simply measure extremes of the same behavior.

However, research also supports the notion that autocratic and democratic behavior are distinct entities. Chelladurai and Saleh (1978) sampled 160 physical education students and found that males preferred more autocratic than their female counterparts, but the males did not report corresponding low preferences for democratic behavior. Likewise, Chelladurai and Carron (1981) indicated that athletes scoring high on cognitive structure preferred significantly less autocratic behavior than those athletes with lower cognitive structure, yet those same athletes did not prefer significantly more democratic behavior. Terry (1984) found males to

prefer more autocratic behavior, but not less democratic behavior, than females in a sample of competitive elite athletes. Furthermore, the results of the present study found that congruency of preferred and perceived autocratic behavior predicted several outcomes, yet no support for the congruency hypothesis was found for democratic behavior on any of the selected outcomes. Perhaps age might play a role in this issue since Serpa (1990) discovered that younger female basketball players in Portugal preferred more democratic behavior, while older players preferred more autocratic behavior. Regardless, more research into this controversy seems warranted.

Fourth, while the present study provided partial support for the predictive relationship of leadership behavior congruency and commitment, structural equation modeling (Jöreskog & Sörbom, 1993) can be utilized to determine the proper placement of the commitment construct within the Multidimensional Model of Leadership. While the present study characterized commitment as a direct consequence of leadership behavior congruency, another recent non-sport study has suggested that organizational commitment is a mediator of the relationships of leadership behavior with job satisfaction and performance (Yousef, 2000). This study examined the role of organizational commitment in the relationships of leadership behavior with the work outcomes of job satisfaction and job performance in a non-western country where multiculturalism was a dominant feature of the workforce. The results indicated that those who perceived their superiors as adopting consultative or participative leadership behavior were more committed to their organizations, more satisfied with their jobs, and maintained high levels of performance. Furthermore, the results also supported the role of organizational commitment as a mediator in the relationship between leadership behavior and job satisfaction and job performance. Future research could examine a potential mediating relation of commitment between leadership behavior and satisfaction and performance in sport.

Fifth, while the present study provided partial support for the predictive relationship of leadership behavior congruency and motivation, structural equation modeling (Jöreskog & Sörbom, 1993) can be utilized to determine the proper placement of the motivation construct within the Multidimensional Model of Leadership. The present study evaluated motivation as a direct consequence of leader behavior, but a recent study conducted by Charbonneau, Barling, and Kelloway (2001) examined the mediating role of intrinsic motivation between the relationship of transformational leadership and sports performance. A survey of 168 athletes along with performance evaluations from their respective coaches revealed a mediating role of

intrinsic motivation between transformational leadership and sports performance. Chelladurai (2001) has recently linked the notion of transformational leadership to the elements of transactional leadership within the Multidimensional Model of Leadership. Future studies could evaluate a potential mediating relation of intrinsic motivation between leadership behavior and satisfaction and performance in sport.

APPENDIX A

SURVEY INSTRUMENT

APPENDIX B

LISREL CONFIRMATORY FACTOR ANALYSES

DATE: 7/ 1/2004
TIME: 12:59

L I S R E L 8.70

BY

Karl G. Jöreskog & Dag Sörbom

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The following lines were read from file C:\Documents and Settings\dpandr01\Desktop\LISREL#2\RLSSpref2.SPJ:

TI **CFA for the Revised Leadership Scale for Sports preferred version**
SYSTEM FILE from file 'C:\Documents and Settings\dpandr01\Desktop\LISREL#2\RLSSpref2.DSF'
Sample Size = 245
Latent Variables AB SS TI SC DB PF
Relationships
DBPREF1 = DB
DBPREF2 = DB
DBPREF3 = DB
DBPREF4 = DB
DBPREF5 = DB
DBPREF6 = DB
DBPREF7 = DB
DBPREF8 = DB
DBPREF9 = DB
DBPREF10 = DB
DBPREF11 = DB
DBPREF12 = DB
PFPREF1 = PF
PFPREF2 = PF
PFPREF3 = PF
PFPREF4 = PF
PFPREF5 = PF
PFPREF6 = PF
PFPREF7 = PF
PFPREF8 = PF
PFPREF9 = PF
PFPREF10 = PF
PFPREF11 = PF
PFPREF12 = PF
TIPREF1 = TI
TIPREF2 = TI

TIPREF3 = TI
TIPREF4 = TI
TIPREF5 = TI
TIPREF6 = TI
TIPREF7 = TI
TIPREF8 = TI
TIPREF9 = TI
TIPREF10 = TI
SCPREF1 = SC
SCPREF2 = SC
SCPREF3 = SC
SCPREF4 = SC
SCPREF5 = SC
SCPREF6 = SC
SCPREF7 = SC
SCPREF8 = SC
SCPREF9 = SC
SCPREF10 = SC
SSPREF1 = SS
SSPREF2 = SS
SSPREF3 = SS
SSPREF4 = SS
SSPREF5 = SS
SSPREF6 = SS
SSPREF7 = SS
SSPREF8 = SS
ABPREF1 = AB
ABPREF2 = AB
ABPREF3 = AB
ABPREF4 = AB
ABPREF5 = AB
ABPREF6 = AB
ABPREF7 = AB
ABPREF8 = AB
Set the Variance of AB to 1.00
Set the Variance of SS to 1.00
Set the Variance of TI to 1.00
Set the Variance of SC to 1.00
Set the Variance of DB to 1.00
Set the Variance of PF to 1.00
Path Diagram
End of Problem

Sample Size = 245

TI CFA for the Revised Leadership Scale for Sports preferred version

Covariance Matrix

	DBPREF1	DBPREF2	DBPREF3	DBPREF4	DBPREF5	DBPREF6
DBPREF1	1.09					
DBPREF2	0.28	2.02				
DBPREF3	0.25	1.36	2.85			
DBPREF4	0.26	1.36	1.73	3.20		
DBPREF5	0.11	0.69	0.84	1.30	2.84	

DBPREF6	0.10	1.44	1.65	1.55	1.39	2.88
DBPREF7	0.20	0.71	0.73	0.89	0.52	0.80
DBPREF8	0.08	1.43	1.69	1.63	1.02	1.61
DBPREF9	0.09	0.67	1.12	0.94	0.87	1.12
DBPREF10	0.28	0.79	1.21	1.68	1.21	1.04
DBPREF11	0.18	1.32	1.49	1.58	0.81	1.51
DBPREF12	-0.03	1.16	1.60	1.66	1.16	1.62
PFPREF1	0.04	1.20	1.60	1.57	1.23	1.66
PFPREF2	0.14	0.86	1.19	1.10	0.85	1.22
PFPREF3	0.05	0.78	1.19	0.98	0.43	0.99
PFPREF4	0.06	0.73	0.90	0.85	0.42	0.86
PFPREF5	0.04	0.76	0.84	0.76	0.46	0.86
PFPREF6	-0.02	0.84	0.96	0.93	0.56	1.00
PFPREF7	-0.05	0.96	1.25	1.19	0.84	1.18
PFPREF8	-0.11	0.91	1.10	1.07	0.73	1.19
PFPREF9	0.07	0.92	1.06	1.20	0.78	1.08
PFPREF10	0.27	0.95	1.01	0.98	0.66	1.04
PFPREF11	0.21	0.85	1.13	0.85	0.59	1.00
PFPREF12	-0.03	0.94	1.12	1.05	0.69	1.36
TIPREF1	0.10	0.94	1.06	1.02	0.87	1.26
TIPREF2	-0.04	1.26	1.19	0.91	0.59	1.46
TIPREF3	-0.17	1.21	1.21	0.99	0.30	1.42
TIPREF4	0.04	1.17	1.20	1.09	0.35	1.35
TIPREF5	-0.02	1.10	1.29	1.23	0.32	1.21
TIPREF6	-0.10	1.11	1.29	0.99	0.23	1.20
TIPREF7	-0.04	0.89	1.22	1.05	0.57	1.07
TIPREF8	-0.07	1.14	1.30	0.94	0.30	1.23
TIPREF9	-0.12	0.82	0.90	0.71	-0.10	0.78
TIPREF10	-0.01	1.39	1.48	1.20	0.30	1.39
SCPREF1	0.05	1.08	0.81	0.65	0.35	1.22
SCPREF2	-0.08	1.23	1.33	0.97	0.59	1.43
SCPREF3	0.00	0.89	1.01	0.87	0.42	1.18
SCPREF4	-0.12	1.09	1.22	1.06	0.42	1.31
SCPREF5	-0.18	1.49	1.51	1.51	0.78	1.82
SCPREF6	-0.12	1.47	1.61	1.66	0.99	1.86
SCPREF7	-0.02	1.08	0.98	1.04	0.74	1.39
SCPREF8	-0.02	0.81	0.89	0.75	0.64	1.11
SCPREF9	-0.05	0.48	0.87	0.63	0.51	0.63
SCPREF10	0.00	0.91	1.14	0.98	0.70	1.27
SSPREF1	-0.04	1.01	0.97	0.80	0.34	1.04
SSPREF2	0.07	0.99	1.07	1.11	0.67	1.01
SSPREF3	-0.08	1.32	1.34	1.47	0.89	1.64
SSPREF4	-0.06	1.23	1.18	1.05	0.65	1.34
SSPREF5	-0.03	1.15	1.10	1.00	0.64	1.31
SSPREF6	0.06	1.24	1.18	1.15	0.66	1.29
SSPREF7	0.02	0.88	1.06	1.18	0.88	0.99
SSPREF8	-0.02	0.95	1.05	0.90	0.57	0.98
ABPREF1	0.11	0.85	1.07	1.05	0.64	0.72
ABPREF2	-0.06	-0.76	-0.57	-0.67	-0.30	-0.92
ABPREF3	-0.28	-0.85	-0.96	-1.02	-0.77	-1.22
ABPREF4	-0.12	-0.30	-0.32	-0.29	-0.25	-0.11
ABPREF5	-0.20	0.25	0.18	0.15	-0.03	0.63
ABPREF6	-0.07	-0.98	-0.83	-0.88	-0.55	-1.23
ABPREF7	0.02	-1.40	-1.15	-1.04	-0.67	-1.56
ABPREF8	-0.01	-0.29	-0.16	-0.25	-0.70	-0.58

Covariance Matrix

	DBPREF7	DBPREF8	DBPREF9	DBPREF10	DBPREF11	DBPREF12
DBPREF7	2.02					
DBPREF8	0.96	3.05				
DBPREF9	0.67	1.17	2.42			
DBPREF10	0.55	1.20	0.81	2.51		
DBPREF11	0.73	1.41	0.65	1.44	3.77	
DBPREF12	0.63	1.63	0.93	1.37	1.89	3.02
PFPREF1	0.81	1.66	1.00	1.34	1.72	2.25
PFPREF2	0.49	1.14	0.63	0.87	1.39	1.33
PFPREF3	0.62	0.90	0.56	0.51	1.33	0.92
PFPREF4	0.77	1.01	0.45	0.43	1.09	0.82
PFPREF5	0.63	0.98	0.47	0.39	1.09	0.85
PFPREF6	0.79	1.09	0.46	0.49	1.19	0.97
PFPREF7	0.76	1.13	0.63	0.64	1.23	1.16
PFPREF8	0.71	1.19	0.48	0.73	1.46	1.22
PFPREF9	0.72	1.05	0.46	0.67	1.38	1.02
PFPREF10	0.63	0.92	0.60	0.62	0.97	0.99
PFPREF11	0.63	0.85	0.47	0.45	0.97	1.02
PFPREF12	0.88	1.16	0.64	0.62	1.25	1.25
TIPREF1	0.80	1.26	0.49	0.63	1.23	1.10
TIPREF2	0.74	1.28	0.59	0.56	1.36	1.23
TIPREF3	0.74	1.21	0.50	0.44	1.32	1.27
TIPREF4	0.73	1.12	0.40	0.57	1.33	1.17
TIPREF5	0.87	1.09	0.52	0.58	1.38	1.20
TIPREF6	0.80	1.15	0.62	0.56	1.34	1.39
TIPREF7	0.89	1.17	0.68	0.73	1.35	1.42
TIPREF8	0.82	1.07	0.69	0.53	1.34	1.15
TIPREF9	0.66	0.76	0.54	0.28	0.82	0.75
TIPREF10	0.98	1.29	0.78	0.57	1.72	1.33
SCPREF1	0.71	1.08	0.44	0.06	0.97	0.71
SCPREF2	0.71	1.27	0.61	0.44	1.33	1.22
SCPREF3	0.91	0.94	0.54	0.46	1.00	0.99
SCPREF4	0.96	1.19	0.52	0.62	1.30	1.29
SCPREF5	0.81	1.65	0.84	0.73	1.73	1.73
SCPREF6	0.87	1.76	0.94	0.94	1.74	1.67
SCPREF7	0.85	1.24	0.70	0.58	1.31	1.16
SCPREF8	0.66	0.94	0.72	0.43	0.71	0.88
SCPREF9	0.47	1.02	0.49	0.72	0.70	0.95
SCPREF10	0.68	1.12	0.54	0.71	1.06	1.11
SSPREF1	0.85	1.06	0.58	0.47	0.90	1.08
SSPREF2	0.94	1.04	0.43	0.68	1.10	1.16
SSPREF3	0.96	1.76	0.82	1.04	1.53	1.60
SSPREF4	1.05	1.45	0.62	0.65	1.30	1.19
SSPREF5	1.02	1.32	0.54	0.68	1.34	1.19
SSPREF6	0.96	1.33	0.70	0.97	1.52	1.42
SSPREF7	0.68	1.04	0.54	0.99	1.28	1.40
SSPREF8	0.86	1.02	0.49	0.87	1.23	1.16
ABPREF1	0.51	1.04	0.61	0.86	1.07	0.95
ABPREF2	-0.63	-0.70	-0.36	-0.28	-1.00	-0.77
ABPREF3	-0.53	-0.93	-0.41	-0.68	-1.03	-1.04
ABPREF4	-0.07	-0.29	-0.08	0.02	-0.26	-0.31
ABPREF5	0.17	0.02	0.29	-0.16	0.24	0.29
ABPREF6	-0.78	-0.97	-0.58	-0.41	-0.96	-0.73

ABPREF7	-0.75	-1.52	-0.74	-0.58	-1.24	-1.25
ABPREF8	-0.28	-0.42	-0.32	-0.19	-0.37	-0.26

Covariance Matrix

	PFPREF1	PFPREF2	PFPREF3	PFPREF4	PFPREF5	PFPREF6
PFPREF1	3.26					
PFPREF2	1.35	3.67				
PFPREF3	0.93	2.27	3.76			
PFPREF4	0.90	1.39	1.77	1.96		
PFPREF5	0.83	1.38	1.74	1.70	1.98	
PFPREF6	0.96	1.30	1.72	1.64	1.66	2.21
PFPREF7	1.12	1.24	1.46	1.49	1.44	1.53
PFPREF8	1.46	1.05	1.40	1.55	1.37	1.49
PFPREF9	1.17	1.22	1.36	1.37	1.30	1.42
PFPREF10	1.04	0.97	1.03	1.11	1.20	1.28
PFPREF11	0.97	1.74	1.71	1.60	1.46	1.46
PFPREF12	1.39	1.39	1.39	1.49	1.47	1.53
TIPREF1	1.33	1.24	1.49	1.54	1.46	1.52
TIPREF2	1.39	1.20	1.06	1.16	1.15	1.33
TIPREF3	1.23	1.11	0.79	0.95	0.93	1.04
TIPREF4	1.22	0.94	0.72	0.76	0.73	0.90
TIPREF5	1.18	0.91	0.99	0.95	0.92	1.07
TIPREF6	1.49	1.22	1.05	0.97	0.97	1.11
TIPREF7	1.32	1.39	1.21	1.13	1.04	1.19
TIPREF8	1.25	1.15	1.12	0.97	0.95	1.18
TIPREF9	0.80	0.73	0.71	0.61	0.65	0.70
TIPREF10	1.31	1.10	1.20	1.02	1.13	1.16
SCPREF1	0.71	0.89	0.86	0.72	0.74	0.93
SCPREF2	1.12	1.00	0.80	0.97	0.95	1.12
SCPREF3	1.02	0.96	1.05	1.07	1.01	1.08
SCPREF4	1.26	1.12	1.23	1.20	1.18	1.40
SCPREF5	1.67	1.41	1.37	1.40	1.31	1.49
SCPREF6	1.86	1.43	1.21	1.33	1.30	1.45
SCPREF7	1.26	1.06	1.08	1.14	1.13	1.16
SCPREF8	0.95	0.68	0.50	0.61	0.57	0.72
SCPREF9	0.96	0.41	0.31	0.44	0.43	0.57
SCPREF10	1.22	1.11	0.87	1.00	0.99	1.01
SSPREF1	1.03	0.77	0.73	0.85	0.85	0.92
SSPREF2	1.14	0.83	1.20	1.06	0.99	1.23
SSPREF3	1.49	1.45	1.19	1.19	1.15	1.38
SSPREF4	1.28	1.19	1.29	1.26	1.20	1.40
SSPREF5	1.32	1.11	1.21	1.22	1.18	1.36
SSPREF6	1.35	1.42	1.28	1.07	1.01	1.22
SSPREF7	1.18	0.78	1.02	0.73	0.61	0.78
SSPREF8	1.17	0.88	1.05	0.72	0.73	0.92
ABPREF1	0.86	0.43	0.49	0.48	0.50	0.66
ABPREF2	-0.72	-0.58	-0.76	-0.77	-0.74	-0.83
ABPREF3	-1.12	-0.52	-0.52	-0.53	-0.55	-0.75
ABPREF4	-0.45	-0.40	-0.33	-0.14	-0.21	-0.34
ABPREF5	0.18	0.57	0.38	0.27	0.29	0.22
ABPREF6	-0.76	-0.53	-0.45	-0.60	-0.55	-0.77
ABPREF7	-1.40	-1.18	-0.94	-1.15	-1.17	-1.45
ABPREF8	-0.52	-0.33	-0.30	-0.25	-0.33	-0.28

Covariance Matrix

	PFPREF7	PFPREF8	PFPREF9	PFPREF10	PFPREF11	PFPREF12
PFPREF7	2.75					
PFPREF8	1.99	3.02				
PFPREF9	1.46	1.74	2.69			
PFPREF10	1.23	1.31	1.47	2.34		
PFPREF11	1.35	1.37	1.43	1.32	2.97	
PFPREF12	1.53	1.70	1.64	1.66	1.62	2.51
TIPREF1	1.77	1.78	1.63	1.49	1.53	1.84
TIPREF2	1.22	1.23	1.30	1.22	1.32	1.60
TIPREF3	1.21	1.09	1.18	1.18	1.18	1.49
TIPREF4	1.01	1.06	1.13	1.00	1.01	1.30
TIPREF5	1.13	0.98	1.13	1.09	1.04	1.33
TIPREF6	1.11	1.04	1.20	1.08	1.07	1.52
TIPREF7	1.05	1.10	1.33	0.95	1.25	1.46
TIPREF8	1.01	1.10	1.23	0.98	1.16	1.33
TIPREF9	0.66	0.63	0.73	0.78	0.83	0.96
TIPREF10	1.29	1.16	1.08	1.24	1.26	1.37
SCPREF1	0.60	0.56	0.64	0.55	0.76	0.93
SCPREF2	1.21	1.22	0.96	0.91	1.15	1.28
SCPREF3	1.20	1.14	1.03	1.01	1.05	1.26
SCPREF4	1.48	1.47	1.20	1.33	1.23	1.53
SCPREF5	1.66	1.74	1.49	1.39	1.35	1.86
SCPREF6	1.81	1.61	1.46	1.48	1.22	1.82
SCPREF7	1.12	1.38	1.28	1.18	1.23	1.54
SCPREF8	0.71	0.58	0.45	0.76	0.58	0.94
SCPREF9	0.62	0.75	0.73	0.71	0.53	0.85
SCPREF10	1.14	1.18	1.08	1.06	1.07	1.51
SSPREF1	0.92	0.87	0.97	0.95	1.08	1.26
SSPREF2	1.25	1.28	1.33	1.15	1.26	1.37
SSPREF3	1.59	1.43	1.29	1.26	1.18	1.67
SSPREF4	1.29	1.23	1.11	1.17	1.20	1.43
SSPREF5	1.35	1.32	1.18	1.26	1.22	1.48
SSPREF6	1.36	1.33	1.00	1.16	1.24	1.40
SSPREF7	0.74	0.84	0.90	0.96	0.79	0.98
SSPREF8	0.86	0.92	0.95	0.98	0.75	1.06
ABPREF1	0.60	0.65	0.98	0.81	0.80	0.70
ABPREF2	-0.83	-1.04	-0.62	-0.79	-0.81	-0.91
ABPREF3	-0.64	-0.90	-0.54	-0.65	-0.69	-0.78
ABPREF4	-0.45	-0.49	-0.06	-0.23	-0.31	-0.26
ABPREF5	0.17	0.27	0.29	0.26	0.35	0.51
ABPREF6	-0.74	-0.65	-0.55	-0.67	-0.76	-0.96
ABPREF7	-1.24	-1.44	-0.95	-1.24	-1.20	-1.57
ABPREF8	-0.36	-0.15	-0.16	-0.30	-0.21	-0.27

Covariance Matrix

	TIPREF1	TIPREF2	TIPREF3	TIPREF4	TIPREF5	TIPREF6
TIPREF1	2.53					
TIPREF2	1.41	2.65				
TIPREF3	1.33	1.75	2.85			
TIPREF4	1.29	1.56	1.87	2.86		
TIPREF5	1.19	1.39	1.82	1.80	2.96	

TIPREF6	1.26	1.61	1.95	1.86	1.95	2.83
TIPREF7	1.20	1.31	1.43	1.27	1.38	1.63
TIPREF8	1.19	1.72	1.73	1.77	1.78	1.97
TIPREF9	0.62	1.05	1.46	1.44	1.57	1.47
TIPREF10	1.26	1.58	1.88	1.84	1.99	1.83
SCPREF1	0.90	1.50	1.42	1.53	1.47	1.47
SCPREF2	1.27	1.68	1.78	1.60	1.47	1.47
SCPREF3	1.20	1.20	1.36	1.18	1.38	1.27
SCPREF4	1.43	1.55	1.69	1.69	1.60	1.68
SCPREF5	1.74	2.02	2.08	1.77	1.89	2.02
SCPREF6	1.86	1.91	2.22	1.94	2.01	2.08
SCPREF7	1.36	1.36	1.49	1.42	1.49	1.46
SCPREF8	0.78	0.90	1.00	0.78	0.81	0.86
SCPREF9	0.78	0.85	0.86	0.63	0.83	0.98
SCPREF10	1.26	1.32	1.46	1.11	1.20	1.35
SSPREF1	0.94	1.28	1.33	1.31	1.52	1.42
SSPREF2	1.28	1.16	0.98	0.97	1.17	1.19
SSPREF3	1.66	1.65	1.53	1.60	1.57	1.57
SSPREF4	1.47	1.39	1.32	1.25	1.27	1.32
SSPREF5	1.43	1.25	1.26	1.30	1.32	1.40
SSPREF6	1.32	1.41	1.38	1.33	1.48	1.54
SSPREF7	1.09	0.90	1.02	0.93	1.05	0.90
SSPREF8	1.05	1.08	1.08	0.92	0.94	1.08
ABPREF1	0.73	0.93	0.83	0.64	0.81	0.89
ABPREF2	-0.93	-0.82	-1.01	-0.77	-0.71	-0.74
ABPREF3	-0.85	-0.79	-0.75	-0.77	-0.86	-0.76
ABPREF4	-0.26	-0.41	-0.27	-0.28	-0.25	-0.35
ABPREF5	0.32	0.69	0.65	0.47	0.52	0.65
ABPREF6	-0.97	-0.91	-1.12	-1.12	-1.07	-0.89
ABPREF7	-1.48	-1.49	-1.53	-1.30	-1.26	-1.34
ABPREF8	-0.61	-0.19	-0.31	-0.17	-0.04	-0.14

Covariance Matrix

	TIPREF7	TIPREF8	TIPREF9	TIPREF10	SCPREF1	SCPREF2
TIPREF7	2.67					
TIPREF8	1.69	2.56				
TIPREF9	1.33	1.54	2.52			
TIPREF10	1.61	1.90	1.87	2.96		
SCPREF1	0.92	1.49	1.04	1.46	2.61	
SCPREF2	1.13	1.54	1.03	1.63	1.80	2.96
SCPREF3	1.13	1.25	1.11	1.47	1.18	1.62
SCPREF4	1.49	1.39	1.32	1.77	1.26	1.68
SCPREF5	1.64	1.93	1.21	1.93	1.65	2.04
SCPREF6	1.58	1.86	1.28	1.99	1.63	2.03
SCPREF7	1.31	1.48	1.05	1.59	1.28	1.52
SCPREF8	0.77	0.87	0.63	0.93	0.83	0.97
SCPREF9	0.74	0.71	0.45	0.88	0.46	1.00
SCPREF10	1.11	1.18	0.79	1.25	0.89	1.29
SSPREF1	1.24	1.32	1.11	1.55	1.01	1.41
SSPREF2	1.18	1.12	0.74	1.27	0.79	1.08
SSPREF3	1.36	1.51	1.05	1.64	1.34	1.64
SSPREF4	1.22	1.23	0.98	1.47	1.13	1.31
SSPREF5	1.17	1.23	0.97	1.47	1.05	1.26
SSPREF6	1.23	1.31	1.24	1.66	1.09	1.33

SSPREF7	1.01	0.87	0.57	1.06	0.55	0.90
SSPREF8	0.99	1.03	0.73	1.11	0.63	0.74
ABPREF1	0.79	0.83	0.67	0.95	0.49	0.73
ABPREF2	-0.76	-0.82	-0.60	-1.01	-0.86	-1.04
ABPREF3	-0.64	-0.69	-0.26	-0.87	-0.79	-0.99
ABPREF4	-0.04	-0.21	-0.01	-0.37	-0.39	-0.48
ABPREF5	0.56	0.61	0.71	0.54	0.65	0.57
ABPREF6	-0.72	-1.01	-0.50	-1.28	-1.29	-1.28
ABPREF7	-1.09	-1.43	-0.81	-1.63	-1.29	-1.58
ABPREF8	-0.36	-0.16	0.07	-0.48	-0.33	-0.32

Covariance Matrix

	SCPREF3	SCPREF4	SCPREF5	SCPREF6	SCPREF7	SCPREF8
SCPREF3	2.18					
SCPREF4	1.71	2.73				
SCPREF5	1.58	1.98	3.20			
SCPREF6	1.64	2.11	2.82	3.54		
SCPREF7	1.31	1.50	1.93	2.07	2.69	
SCPREF8	0.81	0.88	1.10	1.27	0.93	1.98
SCPREF9	0.78	0.94	1.02	1.12	1.14	0.93
SCPREF10	1.11	1.35	1.62	1.63	1.37	1.07
SSPREF1	1.20	1.36	1.65	1.53	1.39	0.83
SSPREF2	1.03	1.45	1.46	1.35	1.22	0.72
SSPREF3	1.36	1.83	2.10	2.10	1.55	1.15
SSPREF4	1.16	1.46	1.64	1.72	1.41	1.06
SSPREF5	1.13	1.44	1.59	1.66	1.45	0.94
SSPREF6	1.16	1.63	1.77	1.80	1.53	1.07
SSPREF7	0.87	1.16	1.43	1.28	0.95	0.76
SSPREF8	0.74	1.19	1.28	1.19	1.08	0.59
ABPREF1	0.50	0.90	1.12	1.01	0.99	0.41
ABPREF2	-0.92	-0.99	-1.10	-1.08	-1.03	-0.68
ABPREF3	-0.66	-0.65	-1.05	-1.17	-0.86	-0.65
ABPREF4	-0.23	-0.25	-0.39	-0.37	-0.36	-0.15
ABPREF5	0.67	0.67	0.78	0.75	0.62	0.40
ABPREF6	-0.97	-0.94	-1.32	-1.30	-1.10	-0.89
ABPREF7	-1.23	-1.41	-1.87	-2.00	-1.61	-1.16
ABPREF8	-0.26	-0.24	-0.37	-0.34	-0.31	-0.39

Covariance Matrix

	SCPREF9	SCPREF10	SSPREF1	SSPREF2	SSPREF3	SSPREF4
SCPREF9	3.15					
SCPREF10	1.39	2.25				
SSPREF1	0.80	1.35	2.34			
SSPREF2	0.72	1.02	1.31	2.81		
SSPREF3	1.00	1.36	1.32	1.93	3.16	
SSPREF4	0.79	1.10	1.22	1.66	2.20	2.57
SSPREF5	0.90	1.20	1.28	1.71	2.08	2.32
SSPREF6	0.89	1.25	1.20	1.69	2.07	1.92
SSPREF7	0.74	0.98	0.95	1.21	1.39	1.22
SSPREF8	0.55	0.86	0.86	1.33	1.36	1.43
ABPREF1	0.92	0.72	0.91	0.96	1.00	0.98
ABPREF2	-0.50	-0.81	-0.81	-0.84	-1.24	-1.23

ABPREF3	-0.67	-0.82	-0.84	-0.73	-0.89	-0.92
ABPREF4	-0.32	-0.46	-0.28	-0.35	-0.31	-0.42
ABPREF5	0.09	0.29	0.35	0.15	0.47	0.45
ABPREF6	-0.56	-1.02	-0.99	-0.97	-1.24	-1.08
ABPREF7	-0.79	-1.41	-1.32	-1.11	-1.77	-1.59
ABPREF8	-0.18	-0.44	-0.24	-0.30	-0.45	-0.45

Covariance Matrix

	SSPREF5	SSPREF6	SSPREF7	SSPREF8	ABPREF1	ABPREF2
SSPREF5	2.60					
SSPREF6	1.99	3.26				
SSPREF7	1.31	1.63	3.47			
SSPREF8	1.48	1.86	2.26	3.27		
ABPREF1	0.94	1.25	1.59	1.67	3.54	
ABPREF2	-1.25	-0.83	-0.33	-0.42	-0.41	2.60
ABPREF3	-0.91	-0.89	-0.24	-0.49	-0.27	1.40
ABPREF4	-0.48	-0.45	0.17	-0.12	-0.02	1.02
ABPREF5	0.35	0.48	0.28	0.24	0.28	0.03
ABPREF6	-1.03	-0.94	-0.48	-0.56	-0.40	1.41
ABPREF7	-1.45	-1.48	-0.71	-1.02	-0.51	1.69
ABPREF8	-0.41	-0.36	-0.25	-0.36	0.00	0.83

Covariance Matrix

	ABPREF3	ABPREF4	ABPREF5	ABPREF6	ABPREF7	ABPREF8
ABPREF3	2.90					
ABPREF4	1.27	2.78				
ABPREF5	0.44	0.80	2.35			
ABPREF6	1.64	0.96	0.15	2.81		
ABPREF7	1.86	0.78	-0.03	1.87	3.59	
ABPREF8	1.12	0.70	0.73	1.20	0.99	3.03

TI CFA for the Revised Leadership Scale for Sports preferred version

Number of Iterations = 75

LISREL Estimates (Maximum Likelihood)

Measurement Equations

DBPREF1 = 0.12*DB, Errorvar.= 1.08 , R^2 = 0.013
(0.070) (0.098)
1.73 11.03

DBPREF2 = 1.05*DB, Errorvar.= 0.92 , R^2 = 0.55
(0.080) (0.093)
13.11 9.85

DBPREF3 = 1.26*DB, Errorvar.= 1.25 , R^2 = 0.56

(0.095) (0.13)
13.35 9.78

DBPREF4 = 1.29*DB, Errorvar.= 1.52 , R^2 = 0.52
(0.10) (0.15)
12.74 9.95

DBPREF5 = 0.84*DB, Errorvar.= 2.14 , R^2 = 0.25
(0.10) (0.20)
7.97 10.72

DBPREF6 = 1.30*DB, Errorvar.= 1.19 , R^2 = 0.59
(0.094) (0.12)
13.82 9.63

DBPREF7 = 0.67*DB, Errorvar.= 1.57 , R^2 = 0.22
(0.089) (0.15)
7.55 10.76

DBPREF8 = 1.30*DB, Errorvar.= 1.37 , R^2 = 0.55
(0.098) (0.14)
13.20 9.83

DBPREF9 = 0.77*DB, Errorvar.= 1.82 , R^2 = 0.25
(0.097) (0.17)
7.99 10.72

DBPREF10 = 0.94*DB, Errorvar.= 1.63 , R^2 = 0.35
(0.096) (0.15)
9.84 10.51

DBPREF11 = 1.24*DB, Errorvar.= 2.23 , R^2 = 0.41
(0.11) (0.22)
10.80 10.36

DBPREF12 = 1.26*DB, Errorvar.= 1.42 , R^2 = 0.53
(0.099) (0.14)
12.82 9.93

PFPREF1 = 0.88*PF, Errorvar.= 2.48 , R^2 = 0.24
(0.11) (0.23)
7.95 10.87

PFPREF2 = 1.12*PF, Errorvar.= 2.40 , R^2 = 0.34
(0.11) (0.22)
9.88 10.75

PFPREF3 = 1.30*PF, Errorvar.= 2.06 , R^2 = 0.45
(0.11) (0.19)
11.72 10.59

PFPREF4 = 1.25*PF, Errorvar.= 0.39 , R^2 = 0.80
(0.070) (0.044)

17.86 8.79

PFPREF5 = 1.23*PF, Errorvar.= 0.46 , R^2 = 0.77
(0.072) (0.050)
17.19 9.22

PFPREF6 = 1.27*PF, Errorvar.= 0.60 , R^2 = 0.73
(0.077) (0.062)
16.53 9.54

PFPREF7 = 1.22*PF, Errorvar.= 1.27 , R^2 = 0.54
(0.092) (0.12)
13.20 10.40

PFPREF8 = 1.25*PF, Errorvar.= 1.47 , R^2 = 0.51
(0.098) (0.14)
12.77 10.46

PFPREF9 = 1.16*PF, Errorvar.= 1.34 , R^2 = 0.50
(0.092) (0.13)
12.57 10.49

PFPREF10 = 1.03*PF, Errorvar.= 1.28 , R^2 = 0.45
(0.088) (0.12)
11.72 10.59

PFPREF11 = 1.22*PF, Errorvar.= 1.48 , R^2 = 0.50
(0.097) (0.14)
12.55 10.49

PFPREF12 = 1.27*PF, Errorvar.= 0.89 , R^2 = 0.65
(0.085) (0.089)
15.03 10.03

TIPREF1 = 1.00*TI, Errorvar.= 1.53 , R^2 = 0.39
(0.093) (0.14)
10.71 10.67

TIPREF2 = 1.22*TI, Errorvar.= 1.16 , R^2 = 0.56
(0.090) (0.11)
13.57 10.29

TIPREF3 = 1.37*TI, Errorvar.= 0.97 , R^2 = 0.66
(0.090) (0.098)
15.24 9.91

TIPREF4 = 1.31*TI, Errorvar.= 1.16 , R^2 = 0.60
(0.092) (0.11)
14.14 10.18

TIPREF5 = 1.33*TI, Errorvar.= 1.18 , R^2 = 0.60
(0.094) (0.12)
14.23 10.16

TIPREF6 = 1.39*TI, Errorvar.= 0.90 , R^2 = 0.68
(0.089) (0.092)
15.65 9.78

TIPREF7 = 1.13*TI, Errorvar.= 1.39 , R^2 = 0.48
(0.093) (0.13)
12.15 10.51

TIPREF8 = 1.34*TI, Errorvar.= 0.75 , R^2 = 0.71
(0.084) (0.078)
16.07 9.64

TIPREF9 = 1.06*TI, Errorvar.= 1.40 , R^2 = 0.45
(0.091) (0.13)
11.60 10.57

TIPREF10 = 1.40*TI, Errorvar.= 1.01 , R^2 = 0.66
(0.092) (0.10)
15.27 9.90

SCPREF1 = 1.05*SC, Errorvar.= 1.50 , R^2 = 0.42
(0.093) (0.14)
11.26 10.65

SCPREF2 = 1.29*SC, Errorvar.= 1.29 , R^2 = 0.57
(0.095) (0.12)
13.65 10.35

SCPREF3 = 1.08*SC, Errorvar.= 1.01 , R^2 = 0.54
(0.082) (0.097)
13.14 10.43

SCPREF4 = 1.30*SC, Errorvar.= 1.04 , R^2 = 0.62
(0.089) (0.10)
14.54 10.18

SCPREF5 = 1.58*SC, Errorvar.= 0.69 , R^2 = 0.78
(0.090) (0.076)
17.53 9.09

SCPREF6 = 1.64*SC, Errorvar.= 0.85 , R^2 = 0.76
(0.096) (0.091)
17.09 9.34

SCPREF7 = 1.23*SC, Errorvar.= 1.17 , R^2 = 0.56
(0.090) (0.11)
13.63 10.36

SCPREF8 = 0.77*SC, Errorvar.= 1.39 , R^2 = 0.30
(0.085) (0.13)
9.06 10.82

SCPREF9 = 0.74*SC, Errorvar.= 2.61 , R^2 = 0.17
(0.11) (0.24)
6.63 10.94

SCPREF10 = 1.05*SC, Errorvar.= 1.14 , R^2 = 0.49
(0.085) (0.11)
12.43 10.53

SSPREF1 = 0.91*SS, Errorvar.= 1.52 , R^2 = 0.35
(0.091) (0.14)
9.99 10.73

SSPREF2 = 1.19*SS, Errorvar.= 1.39 , R^2 = 0.50
(0.095) (0.13)
12.59 10.45

SSPREF3 = 1.48*SS, Errorvar.= 0.97 , R^2 = 0.69
(0.093) (0.100)
15.85 9.70

SSPREF4 = 1.48*SS, Errorvar.= 0.38 , R^2 = 0.85
(0.079) (0.050)
18.77 7.59

SSPREF5 = 1.48*SS, Errorvar.= 0.41 , R^2 = 0.84
(0.080) (0.053)
18.60 7.81

SSPREF6 = 1.37*SS, Errorvar.= 1.38 , R^2 = 0.58
(0.099) (0.14)
13.80 10.25

SSPREF7 = 0.95*SS, Errorvar.= 2.56 , R^2 = 0.26
(0.11) (0.24)
8.39 10.84

SSPREF8 = 1.04*SS, Errorvar.= 2.19 , R^2 = 0.33
(0.11) (0.20)
9.61 10.76

ABPREF1 = 0.39*AB, Errorvar.= 3.39 , R^2 = 0.043
(0.13) (0.31)
3.06 10.97

ABPREF2 = - 1.13*AB, Errorvar.= 1.33 , R^2 = 0.49
(0.096) (0.14)
-11.82 9.41

ABPREF3 = - 1.26*AB, Errorvar.= 1.32 , R^2 = 0.55
(0.099) (0.15)
-12.72 8.99

ABPREF4 = - 0.72*AB, Errorvar.= 2.26 , R^2 = 0.19

(0.11) (0.21)
-6.63 10.66

ABPREF5 = - 0.084*AB, Errorvar.= 2.34 , R^2 = 0.0030
(0.11) (0.21)
-0.80 11.04

ABPREF6 = - 1.28*AB, Errorvar.= 1.18 , R^2 = 0.58
(0.096) (0.14)
-13.28 8.66

ABPREF7 = - 1.50*AB, Errorvar.= 1.34 , R^2 = 0.63
(0.11) (0.16)
-14.00 8.17

ABPREF8 = - 0.76*AB, Errorvar.= 2.46 , R^2 = 0.19
(0.11) (0.23)
-6.66 10.65

Correlation Matrix of Independent Variables

	AB	SS	TI	SC	DB	PF
AB	1.00					
SS	0.61	1.00				
	(0.05)					
	12.69					
TI	0.57	0.73	1.00			
	(0.05)	(0.03)				
	11.25	21.07				
SC	0.66	0.77	0.91	1.00		
	(0.04)	(0.03)	(0.02)			
	15.15	25.39	59.39			
DB	0.60	0.71	0.71	0.77	1.00	
	(0.05)	(0.04)	(0.04)	(0.03)		
	12.13	18.81	19.01	24.50		
PF	0.52	0.71	0.70	0.75	0.65	1.00
	(0.05)	(0.04)	(0.04)	(0.03)	(0.04)	
	9.59	20.42	18.82	23.64	15.33	

Goodness of Fit Statistics

Degrees of Freedom = 1695
Minimum Fit Function Chi-Square = 3758.66 (P = 0.0)

Normal Theory Weighted Least Squares Chi-Square = 3834.99 (P = 0.0)
Estimated Non-centrality Parameter (NCP) = 2139.99
90 Percent Confidence Interval for NCP = (1963.94 ; 2323.67)

Minimum Fit Function Value = 15.40
Population Discrepancy Function Value (F0) = 8.77
90 Percent Confidence Interval for F0 = (8.05 ; 9.52)
Root Mean Square Error of Approximation (RMSEA) = 0.072
90 Percent Confidence Interval for RMSEA = (0.069 ; 0.075)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00

Expected Cross-Validation Index (ECVI) = 16.82
90 Percent Confidence Interval for ECVI = (16.10 ; 17.58)
ECVI for Saturated Model = 15.00
ECVI for Independence Model = 275.54

Chi-Square for Independence Model with 1770 Degrees of Freedom = 67110.64
Independence AIC = 67230.64
Model AIC = 4104.99
Saturated AIC = 3660.00
Independence CAIC = 67500.71
Model CAIC = 4712.66
Saturated CAIC = 11897.30

Normed Fit Index (NFI) = 0.94
Non-Normed Fit Index (NNFI) = 0.97
Parsimony Normed Fit Index (PNFI) = 0.90
Comparative Fit Index (CFI) = 0.97
Incremental Fit Index (IFI) = 0.97
Relative Fit Index (RFI) = 0.94

Critical N (CN) = 120.02

Root Mean Square Residual (RMR) = 0.26
Standardized RMR = 0.092
Goodness of Fit Index (GFI) = 0.66
Adjusted Goodness of Fit Index (AGFI) = 0.63
Parsimony Goodness of Fit Index (PGFI) = 0.61

The Modification Indices Suggest to Add the

Path to	from	Decrease in Chi-Square	New Estimate
DBPREF1	TI	8.9	-0.31
DBPREF1	SC	12.1	-0.42
DBPREF2	TI	10.5	0.34
DBPREF2	SC	8.4	0.35
DBPREF5	TI	21.9	-0.71
DBPREF5	SC	9.2	-0.52
DBPREF7	SS	18.2	0.54
DBPREF10	AB	9.8	-0.38
DBPREF10	TI	21.9	-0.63
DBPREF10	SC	26.9	-0.79
DBPREF10	PF	8.5	-0.35
PFPREF1	AB	17.6	0.56

PFPREF1	SS	21.5	0.73
PFPREF1	TI	29.2	0.83
PFPREF1	SC	37.0	1.03
PFPREF1	DB	88.6	1.39
PFPREF4	AB	8.2	-0.17
PFPREF4	SS	8.6	-0.21
PFPREF4	TI	18.6	-0.30
PFPREF4	SC	17.1	-0.32
PFPREF4	DB	19.6	-0.29
PFPREF5	SS	10.1	-0.24
PFPREF5	TI	12.9	-0.26
PFPREF5	SC	15.1	-0.31
PFPREF5	DB	16.0	-0.28
PFPREF12	AB	8.3	0.24
PFPREF12	SS	10.2	0.32
PFPREF12	TI	26.4	0.49
PFPREF12	SC	27.4	0.56
TIPREF1	AB	15.8	0.45
TIPREF1	SS	33.0	0.74
TIPREF1	SC	46.1	1.79
TIPREF1	DB	15.2	0.51
TIPREF1	PF	107.7	1.27
TIPREF2	SC	15.8	0.94
TIPREF2	PF	14.0	0.41
TIPREF4	PF	10.3	-0.35
TIPREF7	PF	9.9	0.37
TIPREF9	AB	12.2	-0.38
TIPREF9	SC	22.1	-1.19
TIPREF9	DB	9.2	-0.38
TIPREF9	PF	9.5	-0.36
SCPREF1	TI	9.1	0.79
SCPREF1	PF	11.2	-0.45
SSPREF1	AB	11.1	0.39
SSPREF1	TI	50.8	0.91
SSPREF1	SC	51.3	1.00
SSPREF1	DB	9.0	0.38
SSPREF3	TI	10.1	0.35
SSPREF3	SC	18.7	0.52
SSPREF3	DB	15.7	0.43
SSPREF4	TI	10.2	-0.26
SSPREF4	SC	11.2	-0.30
SSPREF5	TI	12.0	-0.28
SSPREF5	SC	16.9	-0.37
SSPREF5	DB	15.9	-0.32
ABPREF1	SS	31.3	0.91
ABPREF1	TI	20.9	0.72
ABPREF1	SC	23.9	0.86
ABPREF1	DB	34.2	0.98
ABPREF1	PF	10.8	0.49
ABPREF3	SS	9.2	0.36
ABPREF3	TI	9.0	0.34
ABPREF3	SC	10.3	0.41
ABPREF4	TI	8.3	0.38
ABPREF4	SC	10.0	0.46
ABPREF4	DB	10.6	0.45
ABPREF5	SS	20.7	0.61

ABPREF5	TI	43.5	0.86
ABPREF5	SC	52.5	1.05
ABPREF5	DB	13.5	0.51
ABPREF5	PF	14.1	0.46
ABPREF7	SS	11.2	-0.42
ABPREF7	TI	19.3	-0.53
ABPREF7	SC	25.3	-0.70
ABPREF7	DB	9.0	-0.39
ABPREF7	PF	23.1	-0.54
ABPREF8	TI	11.1	0.45
ABPREF8	SC	12.5	0.54

The Modification Indices Suggest to Add an Error Covariance

Between	and	Decrease in Chi-Square	New Estimate
DBPREF6	DBPREF5	10.3	0.36
DBPREF10	DBPREF2	7.9	-0.24
DBPREF10	DBPREF4	25.0	0.55
DBPREF10	DBPREF5	13.7	0.46
DBPREF12	DBPREF11	9.7	0.39
PFPREF1	DBPREF12	37.3	0.78
PFPREF3	PFPREF2	33.8	0.86
PFPREF4	PFPREF1	14.5	-0.27
PFPREF5	PFPREF1	17.3	-0.32
PFPREF5	PFPREF4	61.1	0.28
PFPREF6	PFPREF5	14.1	0.16
PFPREF8	PFPREF1	9.4	0.39
PFPREF8	PFPREF2	9.2	-0.38
PFPREF8	PFPREF5	12.0	-0.21
PFPREF8	PFPREF7	33.6	0.54
PFPREF9	PFPREF5	8.3	-0.17
PFPREF9	PFPREF8	11.9	0.33
PFPREF10	DBPREF1	9.8	0.24
PFPREF10	PFPREF3	9.8	-0.34
PFPREF10	PFPREF4	20.8	-0.24
PFPREF10	PFPREF9	11.7	0.30
PFPREF11	PFPREF2	10.1	0.40
PFPREF12	PFPREF1	8.8	0.30
PFPREF12	PFPREF3	11.6	-0.32
PFPREF12	PFPREF4	11.4	-0.16
PFPREF12	PFPREF5	8.3	-0.14
PFPREF12	PFPREF10	31.3	0.41
TIPREF1	DBPREF5	11.9	0.41
TIPREF5	TIPREF2	11.3	-0.27
TIPREF7	DBPREF12	8.2	0.28
TIPREF8	TIPREF7	8.3	0.21
TIPREF9	DBPREF5	9.3	-0.35
TIPREF9	TIPREF1	24.0	-0.48
TIPREF9	TIPREF2	9.7	-0.27
TIPREF10	TIPREF9	30.6	0.46
SCPREF1	DBPREF2	9.3	0.24
SCPREF1	DBPREF10	16.6	-0.42
SCPREF1	PFPREF7	9.8	-0.29
SCPREF1	PFPREF8	11.1	-0.33
SCPREF1	TIPREF1	10.0	-0.32
SCPREF2	SCPREF1	26.8	0.49
SCPREF3	DBPREF7	11.6	0.29

SCPREF3	SCPREF2	10.6	0.25
SCPREF4	TIPREF8	12.8	-0.23
SCPREF4	SCPREF3	26.3	0.36
SCPREF5	DBPREF7	10.8	-0.24
SCPREF5	TIPREF9	8.1	-0.20
SCPREF5	SCPREF3	8.5	-0.18
SCPREF6	PFPREF7	13.2	0.27
SCPREF6	PFPREF11	8.3	-0.23
SCPREF6	SCPREF5	32.8	0.36
SCPREF9	SCPREF8	8.9	0.37
SCPREF10	PFPREF12	11.5	0.23
SCPREF10	SCPREF8	11.3	0.28
SCPREF10	SCPREF9	32.8	0.65
SSPREF1	TIPREF1	11.0	-0.33
SSPREF1	SCPREF10	9.7	0.27
SSPREF2	PFPREF9	8.7	0.27
SSPREF4	PFPREF4	9.8	0.10
SSPREF4	SSPREF1	10.0	-0.19
SSPREF5	SSPREF3	15.0	-0.22
SSPREF5	SSPREF4	95.8	0.47
SSPREF6	SSPREF4	9.2	-0.19
SSPREF7	SSPREF4	13.7	-0.29
SSPREF7	SSPREF6	8.1	0.36
SSPREF8	SSPREF6	17.4	0.49
SSPREF8	SSPREF7	73.1	1.33
ABPREF1	PFPREF9	9.8	0.44
ABPREF1	SSPREF7	27.0	0.99
ABPREF1	SSPREF8	31.5	0.99
ABPREF2	SSPREF5	12.7	-0.21
ABPREF3	DBPREF1	8.9	-0.25
ABPREF4	ABPREF3	13.8	0.47
ABPREF5	DBPREF6	13.6	0.42
ABPREF5	DBPREF10	9.0	-0.38
ABPREF5	ABPREF3	11.1	0.41
ABPREF5	ABPREF4	26.3	0.77
ABPREF6	SCPREF1	15.2	-0.37
ABPREF7	ABPREF4	10.2	-0.43
ABPREF8	DBPREF5	11.2	-0.51
ABPREF8	ABPREF5	19.4	0.69

Time used: 3.938 Seconds

DATE: 7/ 1/2004
TIME: 12:55

L I S R E L 8.70

BY

Karl G. Jöreskog & Dag Sörbom

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The following lines were read from file C:\Documents and Settings\dpandr01\Desktop\LISREL#2\RLSSperc2.SPJ:

TI **CFA for the Revised Leadership Scale for Sports perceived version**
SYSTEM FILE from file 'C:\Documents and Settings\dpandr01\Desktop\LISREL#2\RLSSperc2.DSF'
Sample Size = 245
Latent Variables AB SS SC TI PF DB
Relationships
DBPERC1 = DB
DBPERC2 = DB
DBPERC3 = DB
DBPERC4 = DB
DBPERC5 = DB
DBPERC6 = DB
DBPERC7 = DB
DBPERC8 = DB
DBPERC9 = DB
DBPERC10 = DB
DBPERC11 = DB
DBPERC12 = DB
PFPERC1 = PF
PFPERC2 = PF
PFPERC3 = PF
PFPERC4 = PF
PFPERC5 = PF
PFPERC6 = PF
PFPERC7 = PF
PFPERC8 = PF
PFPERC9 = PF
PFPERC10 = PF
PFPERC11 = PF
PFPERC12 = PF
TIPERC1 = TI
TIPERC2 = TI

TIPERC3 = TI
TIPERC4 = TI
TIPERC5 = TI
TIPERC6 = TI
TIPERC7 = TI
TIPERC8 = TI
TIPERC9 = TI
TIPERC10 = TI
SCPERC1 = SC
SCPERC2 = SC
SCPERC3 = SC
SCPERC4 = SC
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SCPERC7 = SC
SCPERC8 = SC
SCPERC9 = SC
SCPERC10 = SC
SSPERC1 = SS
SSPERC2 = SS
SSPERC3 = SS
SSPERC4 = SS
SSPERC5 = SS
SSPERC6 = SS
SSPERC7 = SS
SSPERC8 = SS
ABPERC1 = AB
ABPERC2 = AB
ABPERC3 = AB
ABPERC4 = AB
ABPERC5 = AB
ABPERC6 = AB
ABPERC7 = AB
ABPERC8 = AB
Set the Variance of AB to 1.00
Set the Variance of SS to 1.00
Set the Variance of SC to 1.00
Set the Variance of TI to 1.00
Set the Variance of PF to 1.00
Set the Variance of DB to 1.00
Path Diagram
End of Problem

Sample Size = 245

TI CFA for the Revised Leadership Scale for Sports perceived version

Covariance Matrix

	DBPERC1	DBPERC2	DBPERC3	DBPERC4	DBPERC5	DBPERC6
DBPERC1	1.09					
DBPERC2	0.65	1.68				
DBPERC3	0.58	0.79	1.75			
DBPERC4	0.39	0.59	0.71	2.26		
DBPERC5	0.52	0.58	0.61	0.69	1.37	

DBPERC6	0.33	0.48	0.50	0.54	0.37	1.21
DBPERC7	0.53	0.65	0.73	0.65	0.53	0.45
DBPERC8	0.44	0.57	0.65	0.68	0.48	0.42
DBPERC9	0.47	0.86	1.03	1.09	0.54	0.52
DBPERC10	0.47	0.68	0.67	0.53	0.32	0.29
DBPERC11	0.43	0.78	0.74	0.75	0.60	0.45
DBPERC12	0.49	0.79	0.76	0.84	0.59	0.47
PFPERC1	0.31	0.31	0.38	0.21	0.20	0.23
PFPERC2	0.30	0.42	0.37	0.12	0.26	0.13
PFPERC3	0.27	0.33	0.30	0.15	0.25	0.33
PFPERC4	0.25	0.24	0.22	0.07	0.18	0.25
PFPERC5	0.27	0.34	0.26	0.13	0.21	0.38
PFPERC6	0.21	0.39	0.17	0.03	0.18	0.26
PFPERC7	0.22	0.37	0.23	0.18	0.23	0.33
PFPERC8	0.15	0.17	0.16	0.20	0.03	0.25
PFPERC9	0.26	0.33	0.32	0.28	0.21	0.31
PFPERC10	0.26	0.33	0.19	0.10	0.18	0.25
PFPERC11	0.23	0.29	0.26	0.11	0.25	0.32
PFPERC12	0.21	0.31	0.23	0.11	0.16	0.19
TIPERC1	0.23	0.14	0.12	0.15	0.21	0.29
TIPERC2	0.18	0.12	0.18	0.10	0.08	0.35
TIPERC3	0.33	0.20	0.36	0.15	0.16	0.35
TIPERC4	0.34	0.34	0.29	0.12	0.21	0.29
TIPERC5	0.29	0.20	0.21	0.20	0.26	0.39
TIPERC6	0.25	0.51	0.31	0.36	0.24	0.33
TIPERC7	0.29	0.35	0.41	0.11	0.32	0.41
TIPERC8	0.28	0.07	0.33	-0.01	0.21	0.20
TIPERC9	0.28	0.26	0.16	-0.01	0.28	0.31
TIPERC10	0.23	0.20	0.11	0.13	0.19	0.33
SCPERC1	0.26	0.30	0.24	0.17	0.36	0.30
SCPERC2	0.24	0.17	0.29	0.23	0.30	0.36
SCPERC3	0.23	0.24	0.18	0.03	0.22	0.39
SCPERC4	0.19	0.24	0.16	0.19	0.30	0.29
SCPERC5	0.21	0.31	0.32	0.20	0.23	0.25
SCPERC6	0.24	0.23	0.35	0.26	0.22	0.29
SCPERC7	0.19	0.29	0.02	0.11	0.24	0.24
SCPERC8	0.19	0.23	-0.05	-0.01	0.14	0.14
SCPERC9	0.20	0.18	0.24	0.11	0.13	0.25
SCPERC10	0.25	0.23	0.14	0.25	0.19	0.42
SSPERC1	0.23	0.24	0.21	0.07	0.20	0.11
SSPERC2	0.30	0.37	0.29	0.25	0.34	0.40
SSPERC3	0.18	0.20	0.12	0.12	0.19	0.29
SSPERC4	0.18	0.18	0.13	0.08	0.25	0.33
SSPERC5	0.12	0.07	0.07	0.00	0.14	0.22
SSPERC6	-0.01	0.15	0.23	0.06	0.05	0.11
SSPERC7	0.05	0.15	0.20	0.01	0.15	0.13
SSPERC8	0.16	0.21	0.26	0.05	-0.17	-0.02
ABPERC1	-0.20	-0.06	0.19	-0.25	-0.17	-0.22
ABPERC2	-0.42	-0.54	-0.24	-0.60	-0.39	-0.46
ABPERC3	-0.30	-0.23	-0.01	-0.21	-0.21	-0.09
ABPERC4	-0.03	-0.05	-0.11	-0.11	0.16	0.01
ABPERC5	-0.31	-0.24	-0.24	-0.24	-0.29	-0.45
ABPERC6	-0.22	-0.20	-0.10	-0.13	-0.14	-0.25
ABPERC7	0.00	-0.01	0.14	-0.34	-0.19	-0.22
ABPERC8	-0.19	-0.10	0.00	0.05	-0.20	-0.21

Covariance Matrix

	DBPERC7	DBPERC8	DBPERC9	DBPERC10	DBPERC11	DBPERC12
DBPERC7	1.77					
DBPERC8	0.49	2.05				
DBPERC9	0.42	0.90	2.38			
DBPERC10	0.52	0.53	0.79	2.56		
DBPERC11	0.80	0.75	0.86	0.85	2.36	
DBPERC12	0.77	0.78	0.88	0.80	1.36	2.59
PFPERC1	0.41	0.32	0.26	0.45	0.36	0.41
PFPERC2	0.27	0.24	0.20	0.79	0.45	0.30
PFPERC3	0.31	0.11	0.18	0.33	0.17	0.24
PFPERC4	0.22	0.11	0.12	0.22	0.13	0.12
PFPERC5	0.32	0.29	0.22	0.25	0.33	0.20
PFPERC6	0.16	0.14	0.06	0.37	0.12	0.21
PFPERC7	0.25	0.20	0.20	0.50	0.34	0.50
PFPERC8	0.32	0.06	0.30	0.54	0.17	0.56
PFPERC9	0.32	0.27	0.24	0.27	0.26	0.22
PFPERC10	0.20	0.15	0.09	0.30	0.23	0.25
PFPERC11	0.37	0.21	0.13	0.35	0.25	0.29
PFPERC12	0.30	0.21	0.11	0.37	0.23	0.45
TIPERC1	0.45	0.20	-0.03	0.33	0.13	0.33
TIPERC2	0.48	0.04	0.03	0.26	0.15	0.05
TIPERC3	0.62	0.09	0.08	0.50	0.27	0.26
TIPERC4	0.24	0.13	0.24	0.36	0.24	0.21
TIPERC5	0.44	0.14	0.16	0.39	0.22	0.30
TIPERC6	0.51	0.41	0.27	0.55	0.58	0.63
TIPERC7	0.40	0.35	0.10	0.52	0.43	0.56
TIPERC8	0.29	0.23	-0.09	0.14	0.11	0.13
TIPERC9	0.14	0.15	0.00	0.28	0.22	0.21
TIPERC10	0.25	0.10	-0.08	0.09	0.02	0.06
SCPERC1	0.24	0.32	0.34	0.32	0.19	0.05
SCPERC2	0.21	0.28	0.27	0.23	0.32	0.20
SCPERC3	0.24	0.16	0.09	0.41	0.30	0.17
SCPERC4	0.13	0.16	0.18	0.24	0.36	0.35
SCPERC5	0.23	0.16	0.22	0.25	0.23	0.36
SCPERC6	0.23	0.29	0.25	0.21	0.22	0.29
SCPERC7	0.24	0.21	0.04	0.19	0.09	0.21
SCPERC8	0.14	0.12	0.31	0.25	0.14	0.14
SCPERC9	0.31	0.10	0.20	0.18	0.04	0.17
SCPERC10	0.30	0.33	0.08	0.28	0.31	0.26
SSPERC1	0.35	0.25	0.08	0.48	0.15	0.36
SSPERC2	0.50	0.34	0.17	0.44	0.27	0.31
SSPERC3	0.19	0.11	0.04	0.20	0.06	0.17
SSPERC4	0.26	0.07	0.02	0.29	0.22	0.33
SSPERC5	0.09	0.04	-0.04	0.12	0.22	0.18
SSPERC6	0.18	0.19	0.46	0.41	0.48	0.43
SSPERC7	0.08	0.01	0.16	0.42	0.35	0.35
SSPERC8	0.10	0.09	0.45	0.60	0.19	0.37
ABPERC1	0.06	-0.04	0.21	-0.09	-0.12	-0.08
ABPERC2	-0.30	-0.25	-0.39	-0.19	-0.33	-0.60
ABPERC3	-0.10	-0.10	-0.07	0.01	-0.06	-0.20
ABPERC4	-0.08	0.15	-0.28	0.03	-0.04	-0.13
ABPERC5	-0.20	-0.18	-0.18	-0.17	-0.11	-0.29
ABPERC6	-0.37	-0.21	-0.02	0.01	0.02	-0.21

ABPERC7	-0.19	0.14	-0.16	0.10	-0.01	-0.11
ABPERC8	-0.17	-0.21	0.13	0.00	0.02	-0.05

Covariance Matrix

	PFPERC1	PFPERC2	PFPERC3	PFPERC4	PFPERC5	PFPERC6
PFPERC1	3.01					
PFPERC2	1.70	2.99				
PFPERC3	0.36	0.50	0.77			
PFPERC4	0.34	0.42	0.49	0.60		
PFPERC5	0.44	0.59	0.62	0.51	1.02	
PFPERC6	0.48	0.47	0.40	0.42	0.57	1.33
PFPERC7	0.40	0.52	0.49	0.43	0.56	0.84
PFPERC8	0.39	0.55	0.42	0.36	0.46	0.60
PFPERC9	0.44	0.17	0.27	0.24	0.34	0.40
PFPERC10	0.95	0.82	0.60	0.39	0.60	0.47
PFPERC11	0.37	0.31	0.45	0.40	0.44	0.41
PFPERC12	0.39	0.33	0.42	0.37	0.46	0.54
TIPERC1	0.32	0.28	0.32	0.27	0.31	0.31
TIPERC2	0.28	0.34	0.37	0.33	0.42	0.30
TIPERC3	0.37	0.48	0.39	0.38	0.41	0.22
TIPERC4	0.16	0.27	0.41	0.37	0.42	0.36
TIPERC5	0.13	0.29	0.30	0.29	0.27	0.20
TIPERC6	0.50	0.55	0.23	0.16	0.31	0.25
TIPERC7	0.44	0.60	0.33	0.25	0.31	0.28
TIPERC8	0.57	0.59	0.34	0.28	0.31	0.11
TIPERC9	0.49	0.51	0.24	0.27	0.29	0.26
TIPERC10	0.08	0.07	0.36	0.32	0.33	0.30
SCPERC1	0.05	0.22	0.27	0.26	0.29	0.34
SCPERC2	0.25	0.42	0.36	0.33	0.42	0.40
SCPERC3	0.39	0.48	0.39	0.35	0.45	0.44
SCPERC4	0.18	0.33	0.38	0.35	0.40	0.41
SCPERC5	0.34	0.29	0.32	0.32	0.39	0.47
SCPERC6	0.20	0.06	0.32	0.26	0.33	0.33
SCPERC7	0.16	0.17	0.32	0.26	0.35	0.33
SCPERC8	0.06	-0.11	0.20	0.13	0.34	0.34
SCPERC9	0.49	0.24	0.30	0.25	0.30	0.28
SCPERC10	0.28	0.33	0.38	0.31	0.37	0.37
SSPERC1	0.27	0.40	0.34	0.25	0.33	0.41
SSPERC2	0.43	0.31	0.39	0.34	0.40	0.42
SSPERC3	0.30	0.31	0.29	0.28	0.31	0.36
SSPERC4	0.35	0.26	0.25	0.23	0.23	0.44
SSPERC5	0.48	0.53	0.21	0.13	0.24	0.38
SSPERC6	0.38	0.65	0.17	0.01	0.06	0.04
SSPERC7	0.35	0.35	0.17	0.07	0.06	0.13
SSPERC8	0.24	0.32	0.13	0.02	0.01	0.28
ABPERC1	0.08	0.14	-0.21	-0.24	-0.14	-0.29
ABPERC2	-0.10	0.08	-0.36	-0.26	-0.27	-0.30
ABPERC3	0.01	0.10	-0.19	-0.22	-0.19	-0.40
ABPERC4	0.43	0.39	-0.08	-0.03	-0.01	-0.07
ABPERC5	-0.15	-0.02	-0.35	-0.30	-0.29	-0.31
ABPERC6	-0.08	-0.05	-0.33	-0.32	-0.34	-0.28
ABPERC7	-0.02	0.20	-0.14	-0.16	-0.03	-0.17
ABPERC8	-0.01	-0.01	-0.26	-0.29	-0.24	-0.43

Covariance Matrix

	PFPERC7	PFPERC8	PFPERC9	PFPERC10	PFPERC11	PFPERC12
PFPERC7	1.88					
PFPERC8	0.95	2.19				
PFPERC9	0.67	0.79	1.59			
PFPERC10	0.58	0.65	0.63	2.08		
PFPERC11	0.51	0.57	0.51	0.66	1.00	
PFPERC12	0.72	0.57	0.55	0.57	0.57	1.18
TIPERC1	0.43	0.53	0.36	0.45	0.63	0.45
TIPERC2	0.34	0.52	0.34	0.20	0.54	0.30
TIPERC3	0.47	0.74	0.36	0.35	0.45	0.32
TIPERC4	0.40	0.34	0.18	0.35	0.38	0.33
TIPERC5	0.43	0.39	0.29	0.30	0.43	0.18
TIPERC6	0.32	0.45	0.21	0.41	0.44	0.23
TIPERC7	0.49	0.51	0.46	0.51	0.50	0.35
TIPERC8	0.15	0.36	0.29	0.37	0.53	0.23
TIPERC9	0.13	0.07	0.34	0.26	0.30	0.27
TIPERC10	0.25	0.20	0.22	0.26	0.40	0.25
SCPERC1	0.28	0.09	0.17	0.32	0.38	0.16
SCPERC2	0.35	0.23	0.24	0.37	0.37	0.33
SCPERC3	0.33	0.26	0.29	0.53	0.46	0.34
SCPERC4	0.45	0.30	0.34	0.48	0.46	0.36
SCPERC5	0.32	0.30	0.41	0.37	0.34	0.42
SCPERC6	0.42	0.51	0.40	0.44	0.54	0.34
SCPERC7	0.24	0.20	0.24	0.31	0.38	0.27
SCPERC8	0.55	0.51	0.48	0.29	0.26	0.29
SCPERC9	0.34	0.39	0.42	0.38	0.48	0.30
SCPERC10	0.40	0.30	0.32	0.37	0.55	0.27
SSPERC1	0.62	0.40	0.33	0.45	0.54	0.40
SSPERC2	0.46	0.35	0.41	0.42	0.54	0.41
SSPERC3	0.36	0.25	0.32	0.39	0.32	0.29
SSPERC4	0.43	0.32	0.25	0.38	0.41	0.24
SSPERC5	0.19	0.59	0.39	0.48	0.40	0.07
SSPERC6	0.22	0.52	0.25	0.43	0.12	0.21
SSPERC7	0.14	0.59	0.22	0.27	0.17	0.24
SSPERC8	0.26	0.85	0.41	0.28	0.10	0.27
ABPERC1	-0.26	-0.03	-0.15	-0.09	-0.27	-0.19
ABPERC2	-0.49	-0.21	-0.32	-0.15	-0.24	-0.30
ABPERC3	-0.34	-0.06	-0.01	-0.13	-0.18	-0.31
ABPERC4	-0.21	0.03	0.14	0.24	0.20	-0.09
ABPERC5	-0.39	-0.07	-0.29	-0.22	-0.43	-0.36
ABPERC6	-0.36	-0.03	-0.23	-0.20	-0.36	-0.34
ABPERC7	0.00	0.00	-0.28	0.05	-0.03	-0.25
ABPERC8	-0.23	-0.02	-0.27	-0.10	-0.35	-0.31

Covariance Matrix

	TIPERC1	TIPERC2	TIPERC3	TIPERC4	TIPERC5	TIPERC6
TIPERC1	1.25					
TIPERC2	0.75	1.55				
TIPERC3	0.74	0.96	2.08			
TIPERC4	0.40	0.62	0.60	1.14		
TIPERC5	0.55	0.77	0.84	0.53	1.62	

TIPERC6	0.47	0.54	0.58	0.37	0.62	1.85
TIPERC7	0.71	0.66	0.88	0.45	0.82	0.89
TIPERC8	0.61	0.77	0.75	0.45	0.59	0.65
TIPERC9	0.40	0.45	0.47	0.44	0.48	0.49
TIPERC10	0.35	0.44	0.37	0.39	0.35	0.21
SCPERC1	0.21	0.32	0.22	0.38	0.32	0.35
SCPERC2	0.28	0.35	0.16	0.40	0.36	0.39
SCPERC3	0.39	0.37	0.35	0.38	0.41	0.44
SCPERC4	0.39	0.33	0.25	0.45	0.49	0.46
SCPERC5	0.34	0.32	0.25	0.39	0.32	0.30
SCPERC6	0.42	0.48	0.39	0.51	0.43	0.43
SCPERC7	0.35	0.28	0.26	0.32	0.38	0.35
SCPERC8	0.28	0.41	0.51	0.59	0.41	0.48
SCPERC9	0.37	0.55	0.42	0.39	0.43	0.38
SCPERC10	0.50	0.51	0.52	0.46	0.46	0.41
SSPERC1	0.37	0.36	0.36	0.27	0.28	0.33
SSPERC2	0.44	0.54	0.51	0.47	0.43	0.38
SSPERC3	0.32	0.26	0.27	0.31	0.26	0.23
SSPERC4	0.44	0.41	0.45	0.31	0.34	0.34
SSPERC5	0.38	0.40	0.23	0.27	0.32	0.32
SSPERC6	0.29	0.31	0.51	0.20	0.39	0.53
SSPERC7	0.31	0.29	0.32	0.22	0.32	0.56
SSPERC8	0.39	0.32	0.40	0.16	0.31	0.54
ABPERC1	-0.20	-0.23	-0.04	-0.20	-0.06	-0.18
ABPERC2	-0.22	-0.26	-0.05	-0.33	-0.25	-0.26
ABPERC3	-0.12	-0.10	0.07	-0.12	-0.02	0.03
ABPERC4	0.17	0.10	0.05	0.07	0.26	0.32
ABPERC5	-0.20	-0.28	-0.22	-0.34	-0.26	-0.11
ABPERC6	-0.19	-0.16	-0.05	-0.23	-0.15	0.00
ABPERC7	0.05	0.02	0.13	0.07	0.09	0.06
ABPERC8	-0.24	-0.23	-0.02	-0.19	-0.09	0.00

Covariance Matrix

	TIPERC7	TIPERC8	TIPERC9	TIPERC10	SCPERC1	SCPERC2
TIPERC7	1.63					
TIPERC8	0.77	1.78				
TIPERC9	0.56	0.72	1.09			
TIPERC10	0.26	0.32	0.32	0.67		
SCPERC1	0.22	0.25	0.34	0.37	1.49	
SCPERC2	0.30	0.37	0.45	0.37	0.73	1.15
SCPERC3	0.51	0.34	0.56	0.40	0.56	0.66
SCPERC4	0.44	0.27	0.42	0.31	0.39	0.53
SCPERC5	0.32	0.26	0.36	0.27	0.26	0.43
SCPERC6	0.41	0.49	0.27	0.33	0.51	0.40
SCPERC7	0.33	0.33	0.32	0.33	0.37	0.29
SCPERC8	0.40	0.27	0.26	0.14	0.27	0.25
SCPERC9	0.45	0.51	0.30	0.24	0.39	0.44
SCPERC10	0.43	0.50	0.43	0.42	0.41	0.38
SSPERC1	0.39	0.42	0.21	0.26	0.41	0.38
SSPERC2	0.36	0.29	0.29	0.41	0.46	0.44
SSPERC3	0.26	0.19	0.36	0.29	0.30	0.30
SSPERC4	0.38	0.31	0.37	0.27	0.39	0.32
SSPERC5	0.42	0.46	0.32	0.20	0.34	0.26
SSPERC6	0.42	0.45	0.29	-0.14	0.20	0.20

SSPERC7	0.49	0.35	0.28	0.04	0.07	0.16
SSPERC8	0.31	0.32	0.34	-0.08	0.08	0.16
ABPERC1	-0.13	-0.19	-0.27	-0.41	-0.29	-0.29
ABPERC2	-0.19	-0.14	-0.15	-0.31	-0.33	-0.30
ABPERC3	0.00	-0.04	-0.06	-0.15	-0.24	-0.10
ABPERC4	0.37	0.44	0.29	0.14	0.17	0.24
ABPERC5	-0.18	-0.19	-0.33	-0.41	-0.30	-0.33
ABPERC6	-0.05	0.00	-0.14	-0.30	-0.24	-0.24
ABPERC7	0.23	0.23	0.01	-0.15	0.06	-0.13
ABPERC8	-0.04	-0.10	-0.23	-0.34	-0.25	-0.28

Covariance Matrix

	SCPERC3	SCPERC4	SCPERC5	SCPERC6	SCPERC7	SCPERC8
SCPERC3	1.08					
SCPERC4	0.58	0.95				
SCPERC5	0.50	0.52	0.99			
SCPERC6	0.44	0.52	0.54	1.32		
SCPERC7	0.40	0.40	0.33	0.32	0.78	
SCPERC8	0.29	0.40	0.37	0.67	0.38	2.73
SCPERC9	0.46	0.41	0.31	0.54	0.38	0.90
SCPERC10	0.52	0.46	0.34	0.48	0.45	0.35
SSPERC1	0.47	0.32	0.22	0.34	0.32	0.14
SSPERC2	0.51	0.38	0.40	0.54	0.31	0.40
SSPERC3	0.39	0.37	0.36	0.35	0.28	0.19
SSPERC4	0.44	0.30	0.33	0.51	0.24	0.30
SSPERC5	0.34	0.25	0.23	0.34	0.18	0.24
SSPERC6	0.09	0.08	0.02	0.07	-0.05	0.28
SSPERC7	0.16	0.19	0.16	0.17	0.11	0.21
SSPERC8	0.18	0.26	0.25	0.09	0.10	0.32
ABPERC1	-0.39	-0.39	-0.31	-0.46	-0.25	-0.08
ABPERC2	-0.23	-0.39	-0.33	-0.45	-0.30	-0.38
ABPERC3	-0.12	-0.23	-0.25	-0.27	-0.23	-0.07
ABPERC4	0.29	0.14	0.07	0.16	0.14	0.11
ABPERC5	-0.42	-0.40	-0.39	-0.39	-0.37	0.05
ABPERC6	-0.31	-0.30	-0.41	-0.33	-0.42	-0.10
ABPERC7	-0.12	-0.31	-0.25	-0.26	-0.08	-0.17
ABPERC8	-0.41	-0.40	-0.35	-0.40	-0.38	-0.16

Covariance Matrix

	SCPERC9	SCPERC10	SSPERC1	SSPERC2	SSPERC3	SSPERC4
SCPERC9	1.55					
SCPERC10	0.50	1.02				
SSPERC1	0.37	0.44	1.45			
SSPERC2	0.45	0.45	0.60	1.06		
SSPERC3	0.26	0.37	0.42	0.50	0.75	
SSPERC4	0.39	0.40	0.47	0.65	0.60	1.13
SSPERC5	0.34	0.35	0.46	0.48	0.45	0.80
SSPERC6	0.19	0.14	0.43	0.17	0.08	0.38
SSPERC7	0.09	0.12	0.44	0.22	0.29	0.42
SSPERC8	0.26	0.14	0.42	0.12	0.12	0.23
ABPERC1	-0.09	-0.31	-0.13	-0.31	-0.33	-0.43
ABPERC2	-0.27	-0.30	-0.19	-0.31	-0.27	-0.22

ABPERC3	-0.05	-0.18	-0.07	-0.12	-0.21	-0.21
ABPERC4	0.33	0.11	0.11	0.21	0.12	0.13
ABPERC5	-0.28	-0.36	-0.35	-0.41	-0.34	-0.37
ABPERC6	-0.38	-0.36	-0.38	-0.28	-0.42	-0.30
ABPERC7	-0.21	-0.07	0.03	-0.04	-0.11	-0.02
ABPERC8	-0.34	-0.46	-0.32	-0.27	-0.37	-0.35

Covariance Matrix

	SSPERC5	SSPERC6	SSPERC7	SSPERC8	ABPERC1	ABPERC2
SSPERC5	2.07					
SSPERC6	0.96	3.30				
SSPERC7	1.21	1.93	2.86			
SSPERC8	0.74	1.43	1.47	3.32		
ABPERC1	-0.04	0.59	0.23	0.23	2.43	
ABPERC2	0.07	0.40	0.35	0.24	1.23	2.46
ABPERC3	0.21	0.77	0.71	0.28	0.98	1.23
ABPERC4	0.49	0.44	0.60	0.20	0.33	0.60
ABPERC5	-0.21	0.26	-0.01	0.15	0.97	0.95
ABPERC6	-0.10	0.46	0.14	0.32	0.91	0.93
ABPERC7	0.05	0.11	-0.02	0.04	0.73	1.11
ABPERC8	-0.06	0.65	0.18	0.06	1.19	1.03

Covariance Matrix

	ABPERC3	ABPERC4	ABPERC5	ABPERC6	ABPERC7	ABPERC8
ABPERC3	2.80					
ABPERC4	0.98	1.97				
ABPERC5	0.81	0.29	2.15			
ABPERC6	0.74	0.34	1.17	2.04		
ABPERC7	0.75	0.74	0.93	0.82	3.24	
ABPERC8	1.22	0.39	1.06	1.11	1.18	2.36

TI CFA for the Revised Leadership Scale for Sports perceived version

Number of Iterations = 31

LISREL Estimates (Maximum Likelihood)

Measurement Equations

DBPERC1 = 0.62*DB, Errorvar.= 0.71 , R^2 = 0.35
(0.065) (0.070)
9.53 10.15

DBPERC2 = 0.87*DB, Errorvar.= 0.93 , R^2 = 0.45
(0.078) (0.096)
11.14 9.70

DBPERC3 = 0.90*DB, Errorvar.= 0.95 , R^2 = 0.46

(0.079) (0.098)
11.33 9.63

DBPERC4 = 0.83*DB, Errorvar.= 1.58 , R^2 = 0.30
(0.095) (0.15)
8.75 10.32

DBPERC5 = 0.67*DB, Errorvar.= 0.91 , R^2 = 0.33
(0.073) (0.089)
9.23 10.22

DBPERC6 = 0.56*DB, Errorvar.= 0.89 , R^2 = 0.26
(0.070) (0.085)
8.05 10.45

DBPERC7 = 0.76*DB, Errorvar.= 1.19 , R^2 = 0.33
(0.083) (0.12)
9.20 10.23

DBPERC8 = 0.75*DB, Errorvar.= 1.49 , R^2 = 0.27
(0.091) (0.14)
8.22 10.42

DBPERC9 = 0.94*DB, Errorvar.= 1.50 , R^2 = 0.37
(0.095) (0.15)
9.88 10.06

DBPERC10 = 0.75*DB, Errorvar.= 2.01 , R^2 = 0.22
(0.10) (0.19)
7.23 10.58

DBPERC11 = 0.94*DB, Errorvar.= 1.48 , R^2 = 0.37
(0.094) (0.15)
9.93 10.05

DBPERC12 = 0.97*DB, Errorvar.= 1.65 , R^2 = 0.36
(0.099) (0.16)
9.78 10.09

PFPERC1 = 0.63*PF, Errorvar.= 2.61 , R^2 = 0.13
(0.11) (0.24)
5.64 10.88

PFPERC2 = 0.70*PF, Errorvar.= 2.49 , R^2 = 0.16
(0.11) (0.23)
6.33 10.83

PFPERC3 = 0.70*PF, Errorvar.= 0.28 , R^2 = 0.63
(0.048) (0.031)
14.51 9.13

PFPERC4 = 0.60*PF, Errorvar.= 0.23 , R^2 = 0.61
(0.043) (0.025)

14.08 9.33

PFPERC5 = 0.76*PF, Errorvar.= 0.44 , R^2 = 0.57
(0.057) (0.046)
13.48 9.56

PFPERC6 = 0.70*PF, Errorvar.= 0.84 , R^2 = 0.37
(0.069) (0.081)
10.08 10.40

PFPERC7 = 0.80*PF, Errorvar.= 1.23 , R^2 = 0.34
(0.083) (0.12)
9.68 10.46

PFPERC8 = 0.73*PF, Errorvar.= 1.67 , R^2 = 0.24
(0.093) (0.16)
7.82 10.70

PFPERC9 = 0.57*PF, Errorvar.= 1.26 , R^2 = 0.21
(0.080) (0.12)
7.18 10.76

PFPERC10 = 0.81*PF, Errorvar.= 1.42 , R^2 = 0.32
(0.088) (0.13)
9.21 10.53

PFPERC11 = 0.70*PF, Errorvar.= 0.51 , R^2 = 0.49
(0.058) (0.051)
12.10 9.99

PFPERC12 = 0.68*PF, Errorvar.= 0.71 , R^2 = 0.39
(0.065) (0.069)
10.48 10.33

TIPERC1 = 0.75*TI, Errorvar.= 0.69 , R^2 = 0.45
(0.066) (0.070)
11.28 9.92

TIPERC2 = 0.87*TI, Errorvar.= 0.79 , R^2 = 0.49
(0.073) (0.082)
12.00 9.70

TIPERC3 = 0.91*TI, Errorvar.= 1.25 , R^2 = 0.40
(0.087) (0.12)
10.48 10.12

TIPERC4 = 0.66*TI, Errorvar.= 0.71 , R^2 = 0.38
(0.065) (0.070)
10.13 10.20

TIPERC5 = 0.82*TI, Errorvar.= 0.95 , R^2 = 0.41
(0.076) (0.095)
10.69 10.07

TIPERC6 = 0.72*TI, Errorvar.= 1.33 , R^2 = 0.28
(0.085) (0.13)
8.45 10.51

TIPERC7 = 0.87*TI, Errorvar.= 0.88 , R^2 = 0.46
(0.075) (0.089)
11.50 9.86

TIPERC8 = 0.82*TI, Errorvar.= 1.11 , R^2 = 0.38
(0.081) (0.11)
10.08 10.21

TIPERC9 = 0.64*TI, Errorvar.= 0.68 , R^2 = 0.37
(0.063) (0.067)
10.03 10.22

TIPERC10 = 0.47*TI, Errorvar.= 0.45 , R^2 = 0.33
(0.050) (0.043)
9.31 10.36

SCPERC1 = 0.64*SC, Errorvar.= 1.08 , R^2 = 0.27
(0.076) (0.10)
8.37 10.59

SCPERC2 = 0.69*SC, Errorvar.= 0.68 , R^2 = 0.41
(0.064) (0.066)
10.73 10.20

SCPERC3 = 0.77*SC, Errorvar.= 0.49 , R^2 = 0.55
(0.059) (0.051)
13.05 9.55

SCPERC4 = 0.72*SC, Errorvar.= 0.43 , R^2 = 0.54
(0.055) (0.045)
12.94 9.59

SCPERC5 = 0.63*SC, Errorvar.= 0.60 , R^2 = 0.40
(0.060) (0.058)
10.49 10.25

SCPERC6 = 0.71*SC, Errorvar.= 0.82 , R^2 = 0.38
(0.069) (0.080)
10.23 10.30

SCPERC7 = 0.55*SC, Errorvar.= 0.48 , R^2 = 0.38
(0.053) (0.047)
10.30 10.29

SCPERC8 = 0.57*SC, Errorvar.= 2.40 , R^2 = 0.12
(0.11) (0.22)
5.32 10.88

SCPERC9 = 0.65*SC, Errorvar.= 1.13 , R^2 = 0.27
(0.078) (0.11)
8.38 10.59

SCPERC10 = 0.69*SC, Errorvar.= 0.55 , R^2 = 0.46
(0.059) (0.055)
11.61 9.99

SSPERC1 = 0.68*SS, Errorvar.= 0.99 , R^2 = 0.32
(0.076) (0.097)
8.96 10.25

SSPERC2 = 0.78*SS, Errorvar.= 0.46 , R^2 = 0.57
(0.059) (0.052)
13.05 8.73

SSPERC3 = 0.66*SS, Errorvar.= 0.32 , R^2 = 0.57
(0.050) (0.037)
13.14 8.67

SSPERC4 = 0.84*SS, Errorvar.= 0.44 , R^2 = 0.62
(0.061) (0.053)
13.80 8.22

SSPERC5 = 0.78*SS, Errorvar.= 1.45 , R^2 = 0.30
(0.091) (0.14)
8.65 10.31

SSPERC6 = 0.47*SS, Errorvar.= 3.08 , R^2 = 0.066
(0.12) (0.28)
3.80 10.92

SSPERC7 = 0.57*SS, Errorvar.= 2.53 , R^2 = 0.12
(0.11) (0.23)
5.10 10.82

SSPERC8 = 0.40*SS, Errorvar.= 3.16 , R^2 = 0.048
(0.12) (0.29)
3.23 10.96

ABPERC1 = 1.01*AB, Errorvar.= 1.42 , R^2 = 0.42
(0.096) (0.15)
10.48 9.63

ABPERC2 = 1.06*AB, Errorvar.= 1.34 , R^2 = 0.45
(0.095) (0.14)
11.08 9.38

ABPERC3 = 0.97*AB, Errorvar.= 1.85 , R^2 = 0.34
(0.11) (0.18)
9.23 10.03

ABPERC4 = 0.44*AB, Errorvar.= 1.78 , R^2 = 0.097

(0.095) (0.16)
4.60 10.83

ABPERC5 = 0.98*AB, Errorvar.= 1.18 , R^2 = 0.45
(0.089) (0.13)
11.04 9.40

ABPERC6 = 0.96*AB, Errorvar.= 1.11 , R^2 = 0.46
(0.087) (0.12)
11.11 9.37

ABPERC7 = 0.93*AB, Errorvar.= 2.38 , R^2 = 0.27
(0.12) (0.23)
7.99 10.33

ABPERC8 = 1.13*AB, Errorvar.= 1.09 , R^2 = 0.54
(0.091) (0.12)
12.44 8.69

Correlation Matrix of Independent Variables

	AB	SS	SC	TI	PF	DB
AB	1.00					
SS	-0.29	1.00				
	(0.07)					
	-4.18					
SC	-0.43	0.71	1.00			
	(0.06)	(0.04)				
	-6.89	16.39				
TI	-0.19	0.63	0.75	1.00		
	(0.07)	(0.05)	(0.04)			
	-2.69	12.55	19.52			
PF	-0.35	0.63	0.75	0.65	1.00	
	(0.07)	(0.05)	(0.04)	(0.05)		
	-5.29	12.92	20.20	14.30		
DB	-0.21	0.36	0.42	0.39	0.44	1.00
	(0.07)	(0.07)	(0.06)	(0.06)	(0.06)	
	-2.90	5.38	6.76	6.14	7.17	

Goodness of Fit Statistics

Degrees of Freedom = 1695
Minimum Fit Function Chi-Square = 3372.35 (P = 0.0)

Normal Theory Weighted Least Squares Chi-Square = 3608.23 (P = 0.0)
Estimated Non-centrality Parameter (NCP) = 1913.23
90 Percent Confidence Interval for NCP = (1744.17 ; 2089.97)

Minimum Fit Function Value = 13.82
Population Discrepancy Function Value (F0) = 7.84
90 Percent Confidence Interval for F0 = (7.15 ; 8.57)
Root Mean Square Error of Approximation (RMSEA) = 0.068
90 Percent Confidence Interval for RMSEA = (0.065 ; 0.071)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00

Expected Cross-Validation Index (ECVI) = 15.89
90 Percent Confidence Interval for ECVI = (15.20 ; 16.62)
ECVI for Saturated Model = 15.00
ECVI for Independence Model = 104.09

Chi-Square for Independence Model with 1770 Degrees of Freedom = 25277.22
Independence AIC = 25397.22
Model AIC = 3878.23
Saturated AIC = 3660.00
Independence CAIC = 25667.30
Model CAIC = 4485.90
Saturated CAIC = 11897.30

Normed Fit Index (NFI) = 0.87
Non-Normed Fit Index (NNFI) = 0.93
Parsimony Normed Fit Index (PNFI) = 0.83
Comparative Fit Index (CFI) = 0.93
Incremental Fit Index (IFI) = 0.93
Relative Fit Index (RFI) = 0.86

Critical N (CN) = 133.65

Root Mean Square Residual (RMR) = 0.16
Standardized RMR = 0.082
Goodness of Fit Index (GFI) = 0.67
Adjusted Goodness of Fit Index (AGFI) = 0.64
Parsimony Goodness of Fit Index (PGFI) = 0.62

The Modification Indices Suggest to Add the

Path to	from	Decrease in Chi-Square	New Estimate
DBPERC6	SS	13.7	0.27
DBPERC6	SC	18.6	0.32
DBPERC6	TI	16.0	0.30
DBPERC6	PF	12.3	0.26
DBPERC7	TI	7.9	0.24
DBPERC9	SS	10.4	-0.31
DBPERC9	TI	15.5	-0.38
PFPERC2	AB	9.1	0.36
PFPERC11	SS	13.9	0.27
PFPERC11	SC	22.2	0.42
PFPERC11	TI	25.8	0.38
TIPERC3	SC	17.7	-0.59

TIPERC4	SC	12.0	0.36
TIPERC4	PF	8.2	0.25
TIPERC6	DB	9.2	0.28
TIPERC9	SC	8.0	0.29
TIPERC10	AB	24.5	-0.25
TIPERC10	SS	10.3	0.22
TIPERC10	SC	33.2	0.48
TIPERC10	PF	20.7	0.31
SCPERC10	TI	11.8	0.33
SSPERC2	SC	14.3	0.34
SSPERC2	TI	8.3	0.22
SSPERC2	PF	12.8	0.27
SSPERC2	DB	13.8	0.22
SSPERC3	AB	11.4	-0.16
SSPERC4	PF	15.2	-0.30
SSPERC5	AB	9.1	0.28
SSPERC6	AB	28.9	0.70
SSPERC7	A B	15.7	0.47
ABPERC2	DB	14.7	-0.34
ABPERC4	SS	23.1	0.47
ABPERC4	SC	29.8	0.57
ABPERC4	TI	20.5	0.43

The Modification Indices Suggest to Add an Error Covariance

Between	and	Decrease in Chi-Square	New Estimate
DBPERC9	DBPERC4	12.1	0.38
DBPERC9	DBPERC7	14.3	-0.36
DBPERC12	DBPERC11	24.9	0.55
PFPERC2	DBPERC10	8.7	0.43
PFPERC2	PFPERC1	61.3	1.30
PFPERC4	PFPERC3	29.4	0.11
PFPERC5	PFPERC3	23.6	0.14
PFPERC5	PFPERC4	8.1	0.07
PFPERC6	PFPERC3	10.7	-0.12
PFPERC7	PFPERC6	20.8	0.32
PFPERC8	DBPERC12	9.9	0.35
PFPERC8	PFPERC7	17.6	0.40
PFPERC9	PFPERC3	15.4	-0.17
PFPERC9	PFPERC4	10.5	-0.13
PFPERC9	PFPERC8	17.2	0.40
PFPERC10	PFPERC1	13.6	0.47
PFPERC10	PFPERC4	9.3	-0.13
PFPERC11	PFPERC5	11.3	-0.12
PFPERC12	DBPERC12	8.6	0.22
PFPERC12	PFPERC7	9.3	0.20
TIPERC1	PFPERC11	21.5	0.19
TIPERC1	PFPERC12	9.0	0.15
TIPERC2	DBPERC7	8.6	0.20
TIPERC2	PFPERC10	9.6	-0.23
TIPERC3	DBPERC7	8.6	0.25
TIPERC3	PFPERC8	11.2	0.33
TIPERC3	TIPERC2	8.1	0.21
TIPERC6	PFPERC4	9.8	-0.12
TIPERC7	TIPERC6	17.7	0.32
TIPERC9	PFPERC7	8.7	-0.18
TIPERC9	PFPERC8	15.4	-0.28

TIPERC9	TIPERC8	15.3	0.24
TIPERC10	DBPERC6	12.1	0.15
TIPERC10	DBPERC9	7.9	-0.16
TIPERC10	PFPERC1	8.5	-0.21
TIPERC10	PFPERC2	14.5	-0.27
TIPERC10	PFPERC3	9.5	0.08
TIPERC10	PFPERC4	9.9	0.07
TIPERC10	TIPERC7	17.2	-0.18
SCPERC2	TIPERC3	9.7	-0.20
SCPERC2	SCPERC1	32.9	0.34
SCPERC3	TIPERC9	16.8	0.17
SCPERC3	SCPERC2	17.2	0.17
SCPERC4	DBPERC7	8.7	-0.15
SCPERC6	PFPERC2	8.4	-0.28
SCPERC6	TIPERC9	8.2	-0.15
SCPERC6	SCPERC3	9.1	-0.14
SCPERC7	DBPERC3	10.9	-0.16
SCPERC8	SCPERC6	9.7	0.29
SCPERC9	SCPERC8	27.0	0.56
SCPERC10	PFPERC11	10.6	0.12
SSPERC1	DBPERC6	8.6	-0.19
SSPERC2	DBPERC7	8.3	0.16
SSPERC2	TIPERC9	8.6	-0.12
SSPERC2	TIPERC10	11.0	0.11
SSPERC3	TIPERC9	11.2	0.11
SSPERC4	SSPERC3	12.7	0.13
SSPERC5	PFPERC8	10.0	0.33
SSPERC5	PFPERC12	8.2	-0.20
SSPERC5	SSPERC2	9.2	-0.19
SSPERC5	SSPERC4	11.9	0.22
SSPERC6	PFPERC2	7.9	0.51
SSPERC6	TIPERC10	23.6	-0.38
SSPERC6	SSPERC3	15.7	-0.29
SSPERC6	SSPERC5	21.2	0.65
SSPERC7	PFPERC8	9.8	0.42
SSPERC7	TIPERC10	8.4	-0.20
SSPERC7	SSPERC2	14.1	-0.30
SSPERC7	SSPERC5	41.6	0.83
SSPERC7	SSPERC6	89.5	1.72
SSPERC8	DBPERC5	10.0	-0.36
SSPERC8	PFPERC8	21.4	0.69
SSPERC8	TIPERC10	14.1	-0.29
SSPERC8	SSPERC2	8.0	-0.25
SSPERC8	SSPERC5	10.2	0.46
SSPERC8	SSPERC6	39.3	1.26
SSPERC8	SSPERC7	48.1	1.27
ABPERC1	SSPERC4	8.1	-0.17
ABPERC3	SSPERC7	12.4	0.51
ABPERC4	DBPERC9	8.5	-0.32
ABPERC4	PFPERC11	10.1	0.20
ABPERC4	ABPERC3	25.8	0.63
ABPERC6	DBPERC7	8.4	-0.24
ABPERC6	SSPERC3	7.9	-0.13
ABPERC6	ABPERC5	14.2	0.34

Time used: 3.688 Seconds

DATE: 7/1/2004
TIME: 11:09

L I S R E L 8.70

BY

Karl G. Jöreskog & Dag Sörbom

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The following lines were read from file C:\Documents and Settings\dpandr01\Desktop\Graduate School Disk 2\SMS CFA.SPJ:

CFA for Sport Motivation Scale
Raw Data from file 'C:\Documents and Settings\dpandr01\Desktop\Graduate School Disk 2\SMS CFA.psf'
Latent Variables IMES IMK IMTA EMER EMID EMINT AM
Relationships
IMES1 = IMES
IMES2 = IMES
IMES3 = IMES
IMES4 = IMES
IMK1 = IMK
IMK2 = IMK
IMK3 = IMK
IMK4 = IMK
IMTA1 = IMTA
IMTA2 = IMTA
IMTA3 = IMTA
IMTA4 = IMTA
EMER1 = EMER
EMER2 = EMER
EMER3 = EMER
EMER4 = EMER
EMID1 = EMID
EMID2 = EMID
EMID3 = EMID
EMID4 = EMID
EMINT1 = EMINT
EMINT2 = EMINT
EMINT3 = EMINT
EMINT4 = EMINT
AM1 = AM
AM2 = AM

AM3 = AM
AM4 = AM
Path Diagram
End of Problem

Sample Size = 245

CFA for Sport Motivation Scale

Covariance Matrix

	IMES1	IMK1	AM1	IMK2	AM2	EMER1
IMES1	1.82					
IMK1	1.22	2.19				
AM1	-0.45	-0.61	2.76			
IMK2	0.66	1.37	-0.54	2.81		
AM2	-0.27	-0.38	1.61	-0.33	2.08	
EMER1	0.28	0.35	0.35	0.24	0.31	3.21
EMID1	0.44	0.49	-0.28	0.38	-0.16	1.76
IMTA1	0.48	0.77	-0.53	1.09	-0.45	0.58
EMINT1	0.14	0.38	0.28	0.20	0.14	0.98
EMER2	0.39	0.44	0.21	0.15	0.16	2.09
EMID2	0.78	0.84	-0.56	0.84	-0.43	0.87
IMTA2	0.65	1.19	-0.71	1.12	-0.34	0.47
IMES2	0.75	0.70	-0.67	0.76	-0.52	0.17
EMINT2	0.37	0.47	0.38	0.02	0.33	0.97
IMTA3	0.73	1.08	-0.64	1.08	-0.21	0.47
EMER3	0.00	0.00	0.61	0.06	0.65	1.30
EMID3	0.83	0.83	-0.30	0.86	-0.10	0.62
IMES3	1.02	1.01	-0.69	0.92	-0.38	0.20
AM3	-0.36	-0.45	1.40	-0.37	1.18	0.24
IMTA4	0.69	1.02	-0.85	1.11	-0.39	0.40
EMINT3	0.32	0.25	0.32	0.02	0.46	0.76
EMER4	0.11	0.25	0.03	0.28	0.13	1.68
IMK3	0.80	1.41	-0.75	1.99	-0.41	0.41
EMID4	0.33	0.48	-0.01	0.59	-0.11	0.89
IMES4	0.86	0.98	-0.73	0.82	-0.26	0.38
EMINT4	0.56	0.32	0.03	0.20	0.21	0.76
IMK4	0.82	1.34	-0.76	1.65	-0.37	0.38
AM4	-0.01	-0.04	0.89	0.06	1.05	0.48

Covariance Matrix

	EMID1	IMTA1	EMINT1	EMER2	EMID2	IMTA2
EMID1	3.12					
IMTA1	0.66	1.72				
EMINT1	1.05	0.46	3.38			
EMER2	1.38	0.61	1.47	3.55		
EMID2	1.01	0.96	0.70	1.10	2.50	
IMTA2	0.44	0.93	0.29	0.40	1.18	2.08
IMES2	0.29	0.84	0.16	0.32	0.83	0.69
EMINT2	0.77	0.22	1.39	1.30	0.83	0.38
IMTA3	0.58	1.19	0.39	0.53	0.87	1.35
EMER3	1.00	0.10	1.44	1.09	0.44	0.11

EMID3	0.83	0.59	0.53	0.75	1.57	0.99
IMES3	0.37	0.68	-0.03	0.46	1.06	0.98
AM3	-0.03	-0.43	0.03	0.07	-0.37	-0.38
IMTA4	0.59	1.03	0.27	0.41	0.79	1.20
EMINT3	0.58	0.21	0.66	0.84	0.32	0.30
EMER4	1.09	0.50	0.88	1.70	0.71	0.46
IMK3	0.62	1.21	0.15	0.46	1.01	1.34
EMID4	1.72	0.34	0.91	0.89	0.84	0.20
IMES4	0.40	0.77	0.24	0.47	0.85	0.94
EMINT4	0.78	0.28	1.06	0.78	0.46	0.29
IMK4	0.45	1.08	0.29	0.43	0.95	1.27
AM4	0.22	-0.15	0.25	0.29	0.02	-0.15

Covariance Matrix

	IMES2	EMINT2	IMTA3	EMER3	EMID3	IMES3
IMES2	1.36					
EMINT2	0.35	3.54				
IMTA3	0.91	0.65	2.14			
EMER3	0.00	1.47	0.28	2.75		
EMID3	0.75	0.79	0.88	0.44	2.68	
IMES3	1.13	0.48	1.09	-0.06	1.28	2.64
AM3	-0.57	0.06	-0.35	0.42	-0.20	-0.51
IMTA4	0.78	0.32	1.45	-0.02	0.90	1.26
EMINT3	0.14	1.39	0.45	0.91	0.41	0.49
EMER4	0.19	0.88	0.45	1.14	0.55	0.31
IMK3	0.84	0.42	1.33	0.27	0.89	1.13
EMID4	0.34	1.00	0.30	0.92	0.91	0.52
IMES4	0.88	0.65	1.28	0.16	0.85	1.34
EMINT4	0.42	1.45	0.53	1.22	0.73	0.60
IMK4	0.83	0.44	1.39	0.28	1.02	1.24
AM4	-0.23	0.45	-0.14	0.88	0.13	-0.12

Covariance Matrix

	AM3	IMTA4	EMINT3	EMER4	IMK3	EMID4
AM3	1.35					
IMTA4	-0.42	2.31				
EMINT3	0.19	0.14	3.67			
EMER4	0.07	0.53	1.26	3.26		
IMK3	-0.48	1.35	0.50	0.87	2.89	
EMID4	-0.08	0.29	1.13	1.15	0.79	3.28
IMES4	-0.39	1.24	0.26	0.42	1.10	0.54
EMINT4	-0.01	0.47	0.91	0.96	0.43	0.77
IMK4	-0.45	1.33	0.25	0.38	1.90	0.43
AM4	0.70	-0.13	0.58	0.44	0.07	0.34

Covariance Matrix

	IMES4	EMINT4	IMK4	AM4
IMES4	2.29			
EMINT4	0.83	2.94		
IMK4	1.43	0.68	2.48	

AM4 0.01 0.44 0.02 1.97

CFA for Sport Motivation Scale

Number of Iterations = 14

LISREL Estimates (Maximum Likelihood)

Measurement Equations

IMES1 = 0.82*IMES, Errorvar.= 1.14 , R^2 = 0.37
(0.083) (0.11)
9.89 10.03

IMK1 = 1.04*IMK, Errorvar.= 1.10 , R^2 = 0.50
(0.086) (0.11)
12.15 9.83

AM1 = 1.38*AM, Errorvar.= 0.84 , R^2 = 0.69
(0.091) (0.11)
15.26 7.58

IMK2 = 1.28*IMK, Errorvar.= 1.17 , R^2 = 0.58
(0.094) (0.13)
13.60 9.30

AM2 = 1.18*AM, Errorvar.= 0.69 , R^2 = 0.67
(0.080) (0.087)
14.82 8.02

EMER1 = 1.38*EMER, Errorvar.= 1.32 , R^2 = 0.59
(0.11) (0.17)
12.99 7.80

EMID1 = 0.99*EMID, Errorvar.= 2.13 , R^2 = 0.32
(0.11) (0.21)
8.72 9.93

IMTA1 = 0.94*IMTA, Errorvar.= 0.84 , R^2 = 0.52
(0.076) (0.087)
12.44 9.66

EMINT1 = 1.03*EMINT, Errorvar.= 2.33 , R^2 = 0.31
(0.12) (0.24)
8.30 9.53

EMER2 = 1.39*EMER, Errorvar.= 1.62 , R^2 = 0.54
(0.11) (0.19)
12.34 8.34

EMID2 = 1.20*EMID, Errorvar.= 1.07 , R^2 = 0.57
(0.095) (0.14)
12.59 7.68

IMTA2 = 1.07*IMTA, Errorvar.= 0.93 , R^2 = 0.55
(0.082) (0.099)
13.08 9.42

IMES2 = 0.90*IMES, Errorvar.= 0.56 , R^2 = 0.59
(0.067) (0.065)
13.43 8.49

EMINT2 = 1.34*EMINT, Errorvar.= 1.74 , R^2 = 0.51
(0.12) (0.23)
11.02 7.49

IMTA3 = 1.23*IMTA, Errorvar.= 0.63 , R^2 = 0.71
(0.079) (0.080)
15.62 7.83

EMER3 = 1.00*EMER, Errorvar.= 1.74 , R^2 = 0.37
(0.10) (0.18)
9.61 9.76

EMID3 = 1.13*EMID, Errorvar.= 1.40 , R^2 = 0.48
(0.10) (0.16)
11.19 8.82

IMES3 = 1.21*IMES, Errorvar.= 1.17 , R^2 = 0.56
(0.094) (0.13)
12.86 8.85

AM3 = 1.00*AM, Errorvar.= 0.35 , R^2 = 0.74
(0.063) (0.052)
16.02 6.68

IMTA4 = 1.15*IMTA, Errorvar.= 0.99 , R^2 = 0.57
(0.086) (0.11)
13.37 9.29

EMINT3 = 0.92*EMINT, Errorvar.= 2.82 , R^2 = 0.23
(0.13) (0.28)
7.02 10.04

EMER4 = 1.19*EMER, Errorvar.= 1.85 , R^2 = 0.43
(0.11) (0.20)
10.64 9.34

IMK3 = 1.43*IMK, Errorvar.= 0.83 , R^2 = 0.71
(0.091) (0.11)
15.76 7.93

EMID4 = 0.91*EMID, Errorvar.= 2.45 , R^2 = 0.25

(0.12) (0.24)
7.64 10.24

IMES4 = 1.07*IMES, Errorvar.= 1.14 , R^2 = 0.50
(0.089) (0.12)
12.03 9.29

EMINT4 = 1.05*EMINT, Errorvar.= 1.84 , R^2 = 0.37
(0.11) (0.20)
9.21 9.03

IMK4 = 1.33*IMK, Errorvar.= 0.71 , R^2 = 0.71
(0.084) (0.090)
15.79 7.90

AM4 = 0.73*AM, Errorvar.= 1.43 , R^2 = 0.27
(0.088) (0.14)
8.29 10.51

Correlation Matrix of Independent Variables

	IMES	IMK	IMTA	EMER	EMID	EMINT
IMES	1.00					
IMK	0.73	1.00				
	(0.04)					
	17.16					
IMTA	0.80	0.83	1.00			
	(0.04)	(0.03)				
	21.59	27.00				
EMER	0.19	0.22	0.30	1.00		
	(0.08)	(0.07)	(0.07)			
	2.51	2.97	4.11			
EMID	0.67	0.56	0.62	0.62	1.00	
	(0.06)	(0.06)	(0.06)	(0.06)		
	12.21	9.42	10.88	10.40		
EMINT	0.35	0.24	0.31	0.73	0.57	1.00
	(0.08)	(0.08)	(0.08)	(0.06)	(0.07)	
	4.45	3.02	4.04	13.15	8.15	
AM	-0.42	-0.31	-0.34	0.19	-0.19	0.15
	(0.06)	(0.07)	(0.07)	(0.07)	(0.08)	(0.08)
	-6.54	-4.63	-5.10	2.52	-2.50	1.88

Correlation Matrix of Independent Variables

	AM
AM	1.00

Goodness of Fit Statistics

Degrees of Freedom = 329
Minimum Fit Function Chi-Square = 854.49 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square = 844.33 (P = 0.0)
Estimated Non-centrality Parameter (NCP) = 515.33
90 Percent Confidence Interval for NCP = (433.36 ; 604.97)

Minimum Fit Function Value = 3.50
Population Discrepancy Function Value (F0) = 2.11
90 Percent Confidence Interval for F0 = (1.78 ; 2.48)
Root Mean Square Error of Approximation (RMSEA) = 0.080
90 Percent Confidence Interval for RMSEA = (0.073 ; 0.087)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00

Expected Cross-Validation Index (ECVI) = 4.09
90 Percent Confidence Interval for ECVI = (3.76 ; 4.46)
ECVI for Saturated Model = 3.33
ECVI for Independence Model = 35.02

Chi-Square for Independence Model with 378 Degrees of Freedom = 8489.42
Independence AIC = 8545.42
Model AIC = 998.33
Saturated AIC = 812.00
Independence CAIC = 8671.45
Model CAIC = 1344.93
Saturated CAIC = 2639.51

Normed Fit Index (NFI) = 0.90
Non-Normed Fit Index (NNFI) = 0.93
Parsimony Normed Fit Index (PNFI) = 0.78
Comparative Fit Index (CFI) = 0.94
Incremental Fit Index (IFI) = 0.94
Relative Fit Index (RFI) = 0.88

Critical N (CN) = 112.82

Root Mean Square Residual (RMR) = 0.20
Standardized RMR = 0.075
Goodness of Fit Index (GFI) = 0.80
Adjusted Goodness of Fit Index (AGFI) = 0.76
Parsimony Goodness of Fit Index (PGFI) = 0.65

The Modification Indices Suggest to Add the

Path to	from	Decrease in Chi-Square	New Estimate
IMK1	IMES	12.0	0.47

IMK2	IMES	10.4	-0.48
IMK2	IMTA	8.8	-0.59
IMK2	EMINT	8.5	-0.27
EMER1	EMINT	18.1	-0.88
EMID1	IMES	21.6	-0.79
EMID1	EMER	36.8	0.95
EMID1	EMINT	8.2	0.46
EMINT1	EMER	11.4	0.79
EMID2	EMINT	8.8	-0.43
IMES2	AM	10.2	-0.23
EMER3	EMINT	34.2	1.14
EMER3	AM	15.5	0.39
EMID3	IMES	9.3	0.48
EMID3	EMER	14.0	-0.53
EMID4	IMES	8.3	-0.51
EMID4	IMTA	12.8	-0.58
EMID4	EMINT	11.3	0.56
IMES4	IMTA	10.8	0.62
AM4	IMES	8.5	0.28
AM4	IMK	10.3	0.28
AM4	EMER	11.3	0.30
AM4	EMID	12.9	0.32
AM4	EMINT	12.5	0.32

The Modification Indices Suggest to Add an Error Covariance

Between	and	Decrease in Chi-Square	New Estimate
IMK1	IMES1	53.1	0.57
EMID1	EMER1	26.0	0.66
EMER2	EMER1	11.4	0.55
IMTA2	IMK1	8.1	0.21
IMTA2	EMID2	20.8	0.36
IMES2	IMTA1	21.7	0.24
EMER3	EMINT1	8.2	0.41
EMER3	EMER2	13.8	-0.53
EMID3	EMID1	10.6	-0.45
EMID3	IMTA1	9.0	-0.24
EMID3	EMID2	23.1	0.64
IMES3	IMTA1	10.8	-0.24
IMES3	EMINT1	8.8	-0.37
IMES3	EMID3	10.9	0.33
EMER4	EMINT3	11.3	0.55
IMK3	IMK2	12.4	0.33
IMK3	EMER4	21.1	0.45
EMID4	EMID1	38.6	1.01
EMID4	EMID2	10.1	-0.43
EMID4	EMINT3	10.5	0.58
IMES4	IMTA3	8.0	0.19
EMINT4	EMER3	8.4	0.38
IMK4	IMES4	24.3	0.35
IMK4	EMINT4	9.2	0.28
AM4	AM2	12.7	0.28
AM4	EMER3	11.1	0.36

Time used: 0.281 Seconds

DATE: 7/1/2004
TIME: 10:21

L I S R E L 8.70

BY

Karl G. Jöreskog & Dag Sörbom

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The following lines were read from file C:\Documents and Settings\dpandr01\Desktop\Graduate School Disk 2\SCMS CFA.SPJ:

CFA for Sport Commitment Model Scale
SYSTEM FILE from file 'C:\Documents and Settings\dpandr01\Desktop\Graduate School Disk 2\SCMS CFA.dsf'
Latent Variables Commitment Enjoyment SocConstr InvOpps
Relationships
COMMIT1 = Commitment
COMMIT2 = Commitment
COMMIT3 = Commitment
COMMIT4 = Commitment
ENJOY1 = Enjoyment
ENJOY2 = Enjoyment
ENJOY3 = Enjoyment
ENJOY4 = Enjoyment
SOCCON1 = SocConstr
SOCCON2 = SocConstr
SOCCON3 = SocConstr
INVOPPS1 = InvOpps
INVOPPS2 = InvOpps
INVOPPS3 = InvOpps
Path Diagram
End of Problem

Sample Size = 245

CFA for Sport Commitment Model Scale

Covariance Matrix

	COMMIT1	COMMIT2	COMMIT3	COMMIT4	ENJOY1	ENJOY2
COMMIT1	7.88					

COMMIT2	7.57	14.72				
COMMIT3	9.92	13.80	31.26			
COMMIT4	6.39	9.30	11.91	10.81		
ENJOY1	6.27	8.73	12.94	8.02	14.22	
ENJOY2	3.19	5.01	7.20	4.42	7.93	5.34
ENJOY3	9.92	14.05	20.95	12.61	21.09	12.70
ENJOY4	5.96	8.01	11.77	7.28	11.64	7.15
SOCCON1	-1.46	-1.29	-1.19	-1.30	-2.24	-1.53
SOCCON2	-1.92	-1.44	-1.32	-1.06	-2.38	-1.96
SOCCON3	-1.88	-2.14	-2.23	-1.65	-2.47	-1.48
INVOPPS1	3.78	5.44	7.80	4.22	6.79	4.31
INVOPPS2	7.90	10.29	17.70	9.01	13.44	8.32
INVOPPS3	4.23	5.33	8.70	4.45	6.59	3.96

Covariance Matrix

	ENJOY3	ENJOY4	SOCCON1	SOCCON2	SOCCON3	INVOPPS1
ENJOY3	35.62					
ENJOY4	19.19	11.64				
SOCCON1	-4.26	-2.38	3.38			
SOCCON2	-5.16	-2.88	3.98	7.24		
SOCCON3	-4.07	-2.26	1.77	2.74	3.98	
INVOPPS1	10.98	5.82	-0.62	-0.60	-1.39	8.05
INVOPPS2	22.59	12.96	-3.54	-4.65	-2.67	8.69
INVOPPS3	10.76	7.06	-1.65	-2.08	-1.09	3.19

Covariance Matrix

	INVOPPS2	INVOPPS3
INVOPPS2	24.45	
INVOPPS3	11.75	12.70

CFA for Sport Commitment Model Scale

Number of Iterations = 13

LISREL Estimates (Maximum Likelihood)

Measurement Equations

COMMIT1 = 2.28*Commitme, Errorvar.= 2.68 , R^2 = 0.66
(0.15) (0.30)
14.99 8.89

COMMIT2 = 3.24*Commitme, Errorvar.= 4.20 , R^2 = 0.71
(0.20) (0.51)
15.92 8.25

COMMIT3 = 4.39*Commitme, Errorvar.= 12.00, R^2 = 0.62
(0.31) (1.29)

14.23 9.27

COMMIT4 = 2.80*Commitme, Errorvar.= 2.99 , R^2 = 0.72
(0.17) (0.37)
16.08 8.12

ENJOY1 = 3.59*Enjoymen, Errorvar.= 1.30 , R^2 = 0.91
(0.18) (0.14)
20.11 9.02

ENJOY2 = 2.18*Enjoymen, Errorvar.= 0.60 , R^2 = 0.89
(0.11) (0.063)
19.70 9.45

ENJOY3 = 5.86*Enjoymen, Errorvar.= 1.33 , R^2 = 0.96
(0.28) (0.23)
21.24 5.87

ENJOY4 = 3.28*Enjoymen, Errorvar.= 0.91 , R^2 = 0.92
(0.16) (0.11)
20.39 8.60

SOCCON1 = 1.66*SocConst, Errorvar.= 0.63 , R^2 = 0.81
(0.10) (0.17)
16.24 3.84

SOCCON2 = 2.40*SocConst, Errorvar.= 1.48 , R^2 = 0.80
(0.15) (0.35)
16.02 4.21

SOCCON3 = 1.11*SocConst, Errorvar.= 2.75 , R^2 = 0.31
(0.12) (0.26)
9.01 10.48

INVOPPS1 = 1.88*InvOpps, Errorvar.= 4.52 , R^2 = 0.44
(0.17) (0.44)
11.30 10.26

INVOPPS2 = 4.69*InvOpps, Errorvar.= 2.43 , R^2 = 0.90
(0.25) (0.84)
18.76 2.88

INVOPPS3 = 2.41*InvOpps, Errorvar.= 6.88 , R^2 = 0.46
(0.21) (0.68)
11.63 10.19

Correlation Matrix of Independent Variables

	Commitme	Enjoymen	SocConst	InvOpps
Commitme	1.00			

Enjoymen	0.76	1.00		
	(0.03)			
	24.52			
SocConst	-0.26	-0.40	1.00	
	(0.07)	(0.06)		
	-3.81	-6.96		
InvOpps	0.74	0.83	-0.42	1.00
	(0.04)	(0.03)	(0.06)	
	19.54	31.83	-6.96	

Goodness of Fit Statistics

Degrees of Freedom = 71
Minimum Fit Function Chi-Square = 263.30 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square = 248.01 (P = 0.0)
Estimated Non-centrality Parameter (NCP) = 177.01
90 Percent Confidence Interval for NCP = (132.80 ; 228.81)

Minimum Fit Function Value = 1.08
Population Discrepancy Function Value (F0) = 0.73
90 Percent Confidence Interval for F0 = (0.54 ; 0.94)
Root Mean Square Error of Approximation (RMSEA) = 0.10
90 Percent Confidence Interval for RMSEA = (0.088 ; 0.11)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00

Expected Cross-Validation Index (ECVI) = 1.30
90 Percent Confidence Interval for ECVI = (1.11 ; 1.51)
ECVI for Saturated Model = 0.86
ECVI for Independence Model = 26.13

Chi-Square for Independence Model with 91 Degrees of Freedom = 6347.76
Independence AIC = 6375.76
Model AIC = 316.01
Saturated AIC = 210.00
Independence CAIC = 6438.78
Model CAIC = 469.05
Saturated CAIC = 682.63

Normed Fit Index (NFI) = 0.96
Non-Normed Fit Index (NNFI) = 0.96
Parsimony Normed Fit Index (PNFI) = 0.75
Comparative Fit Index (CFI) = 0.97
Incremental Fit Index (IFI) = 0.97
Relative Fit Index (RFI) = 0.95

Critical N (CN) = 95.18

Root Mean Square Residual (RMR) = 0.66

Standardized RMR = 0.062
Goodness of Fit Index (GFI) = 0.87
Adjusted Goodness of Fit Index (AGFI) = 0.81
Parsimony Goodness of Fit Index (PGFI) = 0.59

The Modification Indices Suggest to Add the

Path to	from	Decrease in Chi-Square	New Estimate
COMMIT1	SocConst	9.8	-0.41
COMMIT3	InvOpps	14.5	1.65
ENJOY1	SocConst	11.1	0.31
ENJOY2	Commitme	13.8	-0.35
SOCCON3	Commitme	11.3	-0.40
INVOPPS1	Commitme	11.7	0.90
INVOPPS1	Enjoymen	29.7	1.88
INVOPPS1	SocConst	11.1	0.56
INVOPPS2	Enjoymen	17.2	-3.80
INVOPPS2	SocConst	7.9	-0.87

The Modification Indices Suggest to Add an Error Covariance

Between	and	Decrease in Chi-Square	New Estimate
ENJOY2	COMMIT1	19.6	-0.42
ENJOY4	COMMIT1	8.5	0.36
SOCCON2	ENJOY1	11.1	0.42
INVOPPS1	ENJOY2	9.4	0.36
INVOPPS1	ENJOY4	10.7	-0.49
INVOPPS1	SOCCON3	9.5	-0.73
INVOPPS2	COMMIT3	13.6	2.34
INVOPPS3	ENJOY3	8.2	-0.77
INVOPPS3	ENJOY4	22.8	0.88
INVOPPS3	INVOPPS1	17.4	-1.66
INVOPPS3	INVOPPS2	22.8	3.61

Time used: 0.063 Seconds

DATE: 7/1/2004
TIME: 12:35

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BY

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The following lines were read from file C:\Documents and Settings\dpandr01\Desktop\Graduate School Disk 2\LISREL CFAs\ASQ CFA\ASQ CFA.SPJ:

CFA for Athlete Satisfaction Questionnaire
Raw Data from file 'C:\Documents and Settings\dpandr01\Desktop\Graduate School Disk 2\LISREL CFAs\ASQ CFA\ASQ CFA.psf'
Latent Variables IPS PTS TPS TIS
Relationships
IPS1 = IPS
IPS2 = IPS
IPS3 = IPS
PTS1 = PTS
PTS2 = PTS
PTS3 = PTS
PTS4 = PTS
PTS5 = PTS
TPS1 = TPS
TPS2 = TPS
TPS3 = TPS
TIS1 = TIS
TIS2 = TIS
TIS3 = TIS
Path Diagram
End of Problem

Sample Size = 245

CFA for Athlete Satisfaction Questionnaire

Covariance Matrix

IPS1	PTS1	TPS1	TIS1	PTS2	IPS2

IPS1	2.44					
PTS1	1.49	2.68				
TPS1	0.68	0.61	3.18			
TIS1	1.16	1.81	1.01	3.06		
PTS2	0.94	1.80	0.72	1.83	2.49	
IPS2	1.97	1.79	0.70	1.85	1.41	3.43
TIS2	1.44	2.07	0.77	2.77	1.95	2.28
TPS2	0.81	0.81	2.30	1.14	0.75	0.87
TIS3	1.49	2.09	0.90	2.71	1.96	2.29
TPS3	1.05	1.04	2.14	1.34	0.74	1.10
IPS3	1.67	1.52	0.76	1.80	1.23	2.45
PTS3	1.13	2.23	0.67	1.88	1.98	1.62
PTS4	1.06	2.01	0.75	1.81	2.10	1.44
PTS5	1.12	2.06	0.64	1.96	2.19	1.46

Covariance Matrix

	TIS2	TPS2	TIS3	TPS3	IPS3	PTS3
TIS2	3.39					
TPS2	0.95	2.53				
TIS3	3.03	1.14	3.55			
TPS3	1.18	1.97	1.28	2.68		
IPS3	2.16	0.87	2.15	1.21	2.80	
PTS3	2.13	0.81	2.20	0.98	1.38	2.87
PTS4	2.02	0.90	2.07	0.97	1.30	2.29
PTS5	2.14	0.80	2.18	0.91	1.41	2.35

Covariance Matrix

	PTS4	PTS5
PTS4	2.87	
PTS5	2.59	2.87

CFA for Athlete Satisfaction Questionnaire

Number of Iterations = 11

LISREL Estimates (Maximum Likelihood)

Measurement Equations

IPS1 = 1.14*IPS, Errorvar.= 1.13 , R^2 = 0.53
(0.089) (0.12)
12.86 9.79

PTS1 = 1.33*PTS, Errorvar.= 0.90 , R^2 = 0.66
(0.087) (0.089)
15.39 10.14

TPS1 = 1.56*TPS, Errorvar.= 0.74 , R^2 = 0.77

(0.093) (0.10)
16.77 7.19

TIS1 = 1.57*TIS, Errorvar.= 0.60 , R^2 = 0.80
(0.087) (0.067)
17.92 8.87

PTS2 = 1.36*PTS, Errorvar.= 0.65 , R^2 = 0.74
(0.081) (0.067)
16.71 9.75

IPS2 = 1.65*IPS, Errorvar.= 0.71 , R^2 = 0.79
(0.096) (0.11)
17.21 6.47

TIS2 = 1.75*TIS, Errorvar.= 0.32 , R^2 = 0.91
(0.088) (0.054)
19.89 5.94

TPS2 = 1.46*TPS, Errorvar.= 0.41 , R^2 = 0.84
(0.081) (0.077)
17.98 5.30

TIS3 = 1.74*TIS, Errorvar.= 0.53 , R^2 = 0.85
(0.092) (0.067)
18.82 7.91

TPS3 = 1.37*TPS, Errorvar.= 0.81 , R^2 = 0.70
(0.087) (0.095)
15.67 8.46

IPS3 = 1.49*IPS, Errorvar.= 0.57 , R^2 = 0.80
(0.087) (0.089)
17.27 6.39

PTS3 = 1.49*PTS, Errorvar.= 0.66 , R^2 = 0.77
(0.086) (0.070)
17.31 9.49

PTS4 = 1.57*PTS, Errorvar.= 0.41 , R^2 = 0.86
(0.083) (0.050)
18.94 8.23

PTS5 = 1.61*PTS, Errorvar.= 0.29 , R^2 = 0.90
(0.081) (0.042)
19.83 6.81

Correlation Matrix of Independent Variables

IPS	PTS	TPS	TIS
--------	--------	--------	--------

IPS	1.00			
PTS	0.61	1.00		
	(0.05)			
	13.29			
TPS	0.40	0.36	1.00	
	(0.06)	(0.06)		
	6.72	6.00		
TIS	0.78	0.79	0.42	1.00
	(0.03)	(0.03)	(0.06)	
	25.77	28.62	7.21	

Goodness of Fit Statistics

Degrees of Freedom = 71
Minimum Fit Function Chi-Square = 228.96 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square = 226.61 (P = 0.0)
Estimated Non-centrality Parameter (NCP) = 155.61
90 Percent Confidence Interval for NCP = (113.89 ; 204.95)

Minimum Fit Function Value = 0.94
Population Discrepancy Function Value (F0) = 0.64
90 Percent Confidence Interval for F0 = (0.47 ; 0.84)
Root Mean Square Error of Approximation (RMSEA) = 0.095
90 Percent Confidence Interval for RMSEA = (0.081 ; 0.11)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.00

Expected Cross-Validation Index (ECVI) = 1.21
90 Percent Confidence Interval for ECVI = (1.04 ; 1.41)
ECVI for Saturated Model = 0.86
ECVI for Independence Model = 28.50

Chi-Square for Independence Model with 91 Degrees of Freedom = 6926.00
Independence AIC = 6954.00
Model AIC = 294.61
Saturated AIC = 210.00
Independence CAIC = 7017.02
Model CAIC = 447.66
Saturated CAIC = 682.63

Normed Fit Index (NFI) = 0.97
Non-Normed Fit Index (NNFI) = 0.97
Parsimony Normed Fit Index (PNFI) = 0.75
Comparative Fit Index (CFI) = 0.98
Incremental Fit Index (IFI) = 0.98
Relative Fit Index (RFI) = 0.96

Critical N (CN) = 109.30

Root Mean Square Residual (RMR) = 0.16
Standardized RMR = 0.057
Goodness of Fit Index (GFI) = 0.88
Adjusted Goodness of Fit Index (AGFI) = 0.83
Parsimony Goodness of Fit Index (PGFI) = 0.60

The Modification Indices Suggest to Add the

Path to	from	Decrease in Chi-Square	New Estimate
PTS1	IPS	31.5	0.49
PTS1	TIS	15.3	0.45
TPS1	IPS	12.6	-0.28
TPS1	PTS	7.9	-0.21
TPS1	TIS	12.3	-0.27
TIS1	TPS	9.8	0.20
TIS2	TPS	11.0	-0.20
TPS3	IPS	18.7	0.33
TPS3	TIS	12.6	0.27
PTS4	TIS	10.3	-0.28

The Modification Indices Suggest to Add an Error Covariance

Between	and	Decrease in Chi-Square	New Estimate
PTS1	IPS1	17.9	0.30
TPS2	TPS1	16.3	0.93
TPS3	PTS1	8.3	0.18
TPS3	TPS2	14.0	-0.69
PTS3	PTS1	32.1	0.32
PTS5	PTS1	14.1	-0.18
PTS5	PTS4	38.7	0.28

Time used: 0.078 Seconds

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BIOGRAPHICAL SKETCH

Damon received his Associate of Arts degree from Jefferson Davis College in 1996 while participating in intercollegiate athletics in the sport of tennis. In 1998, he completed a Bachelor of Science in physical education with a specialization in exercise science at the University of South Alabama. The following year, he completed his first masters degree at the University of South Alabama in exercise physiology. He completed a thesis entitled "The Effectiveness of Three Modified Plyometric Depth Jumps and a Periodized Weight Training Program on Selected Functional Tests for Power of the Lower Extremity" under the supervision of Dr. John Kovaleski. In the spring of 2002, Damon finished his second masters degree at the University of Florida in sport management under his advisor, Dr. Daniel Connaughton. His third masters degree in biomechanics was completed in the summer of 2002 under the supervision of Dr. John Chow, and his thesis was entitled "Effect of Ball Size on Reaction Time, Racquet Acceleration, and Muscular Activity during the Tennis Volley." Damon aspires to apply the experiences gained from his degrees in an educational setting. To this end, he has accepted an assistant professor position in sport administration at the University of Louisville that begins in the fall of 2004.